

American Forestry

VOL. XIX

MARCH, 1913

No. 3

SHADE TREES: THEIR SELECTION AND CARE

By F. A. GAYLORD, *State Forester of New York.*

WHEN one visits a city for the first time, that city always makes more or less of an impression for the good or bad, according to many factors. In brief, these factors might be stated as follows: The surrounding country and topography of the city, the architecture of the public buildings, the condition and cleanliness of the streets, the look of prosperity or poverty in the dwelling sections, but above all, the tree and plant growth in and around the settlement.

When one has traveled through the mushroom towns of the plains, the invariable impression is one of desolation and when the impression is analyzed, it is simply because of the lack of tree growth of any kind. The towns in the coal fields of Pennsylvania are unsightly for the same reason. Why is it that Washington, D. C., is considered such a beautiful place? True, it has some of the most interesting buildings in the country, but at the same instant one thinks of the beautiful, wide, shaded streets. The trees of many New England towns have become really noted. New Haven, Conn., has long been known as the City of Elms. Even the elms in the historic town of Old Hadley, Mass., are never forgotten by a visitor.

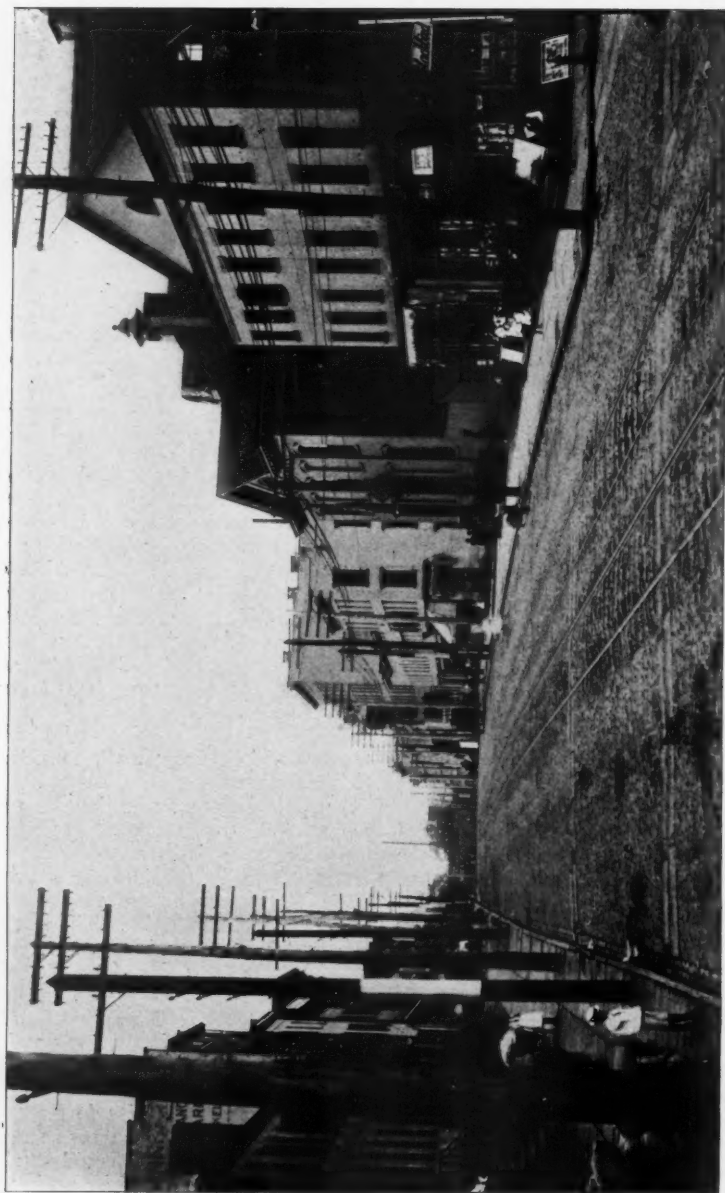
Trees do a great deal to make a city more habitable. They not only shade the street, making it more congenial to travel by reducing the high temperatures due to reflection on the stone pavements, but they soften the whole tone of the place and make it more restful.

They do a great deal to counteract the city influences and make it more like the country. They increase the value of property by inviting settlement, and they make it more healthful by absorbing many of the gases which act as poisons to human beings.

Planting should not end with the crowded sections of the city, but all traveled highways would be more pleasant and beautiful if edged with trees. In all probability the State highways will be planted with trees in the near future and if the counties will also take up this work, the improvement would soon be appreciated. Considering the high cost of building good roads (macadamized roads about \$8,000 per mile), the additional cost of planting trees would be very small, considering the improvement.

Tree planting may be done in many ways. The first attempts are usually by the owner of the property himself. Later it may be put into the hands of one of the several nurserymen who are to be found in all cities. The last and the best way is to have a tree commissioner or city forester, who shall plant the trees of a city according to some definite plan. The city of Washington was planted in this way and the contrast of this city to most others is great and very apparent.

Where the town or city does not take up the question of shade trees as a community, those interested could band together and provide for the planting and protection of shade trees. This has been tried out in some cities with very



A TREELESS STREET.

PIN OAKS.



good results and with a great reduction in cost.

To properly carry out any scheme of shade tree planting in the absence of a city forester, each individual has to do his part. He alone must see to it that his property is planted to shade trees. His responsibility does not end here either, as he must care for the trees very carefully, to protect them from deteriorating influences which are only too abundant in the city. A little time and money spent when needed will prolong the life of a tree many years.

SELECTION OF TREES.

In selecting a shade tree, the following considerations should be borne in mind: (1) Ornamental value desired, (2) shading value, (3) soil and moisture conditions, (4) rate of growth, (5) size and character of growth, (6) cleanliness of habit, (7) liability to insect and fungus damage, (8) endurance of the hard knocks of the city.

Hardwoods or broad leaved species are used in practically all cases. The white or American elm and the sugar maple are the two most popular species, behind which come about thirty trees, which are valuable for shade and ornamental purposes.

When deciding on our street trees, care should be used to select the species which will grow to a size in keeping with the width of the street. In the following lists, the trees which are to be discussed are arranged according to the width of the streets, to which they are best suited. In each list the trees are grouped as nearly as possible in their relative value as shade trees.

Wide Streets.—Elm, sugar maple, sycamore, beech, white oak, weeping willow, Carolina poplar, black walnut, yellow birch, chestnut.

Intermediate Streets.—Norway maple, horse chestnut, tulip, sweet gum, white ash, red oak, cucumber tree, basswood, pin oak, silver maple, honey locust, mulberry, ailanthus, golden willow, hackberry, scarlet oak, sassafras, Kentucky coffee tree, paper birch, hornbeam, hickories, black gum, butternut, black birch, rock and slippery elm, chestnut oak.

Narrow Streets.—Lombardy poplar, catalpa, red maple, locust, box elder, cherry, gray birch, large toothed aspen, trembling aspen, black oak.

We must not select those tree species which branch low down. We must be careful and not select trees which will bear nuts, fruits or flowers, which would be tempting to the public, and particularly small boys. If such trees are planted in public places, the ground at certain times of the year will be strewn with debris and the tree will suffer more or less injury by branches being broken.

The longer the leaf season, the more valuable is the tree. As a rule, the denser the shade, the more serviceable. Even the bark of the trees bears a close relation to their value as street trees. White birch could never be planted in the streets, as it would be stripped almost immediately. The trunk of the beech tree is usually much mutilated by carving in the smooth bark.

The fall coloring of the tree is another thing that should be taken into account when species are being selected for planting. The coloring of each species is taken up in the individual descriptions of the various trees, but little is said of the time of changing color. Colonel Fox, in a bulletin published some years ago, arranged the common trees in three groups as follows:

The trees with foliage turning earliest are red maple, white elm, sumach, yellow locust, sour gum, horse chestnut, silver maple, yellow birch, hickory, tulip, sassafras, butternut, black walnut, cucumber tree, Kentucky coffee tree.

The intermediate trees, sugar maple, sweet gum, chestnut, red and pin oak, beech, white and black birch, aspen, white ash, hornbeam, blue beech, Carolina poplar, basswood, black ash.

The latest trees to turn, scarlet oak, dogwood, honey locust, lombardy poplar, white oak, black cherry, sycamore, Norway maple, ailanthus, willows, larch and ginkgo.

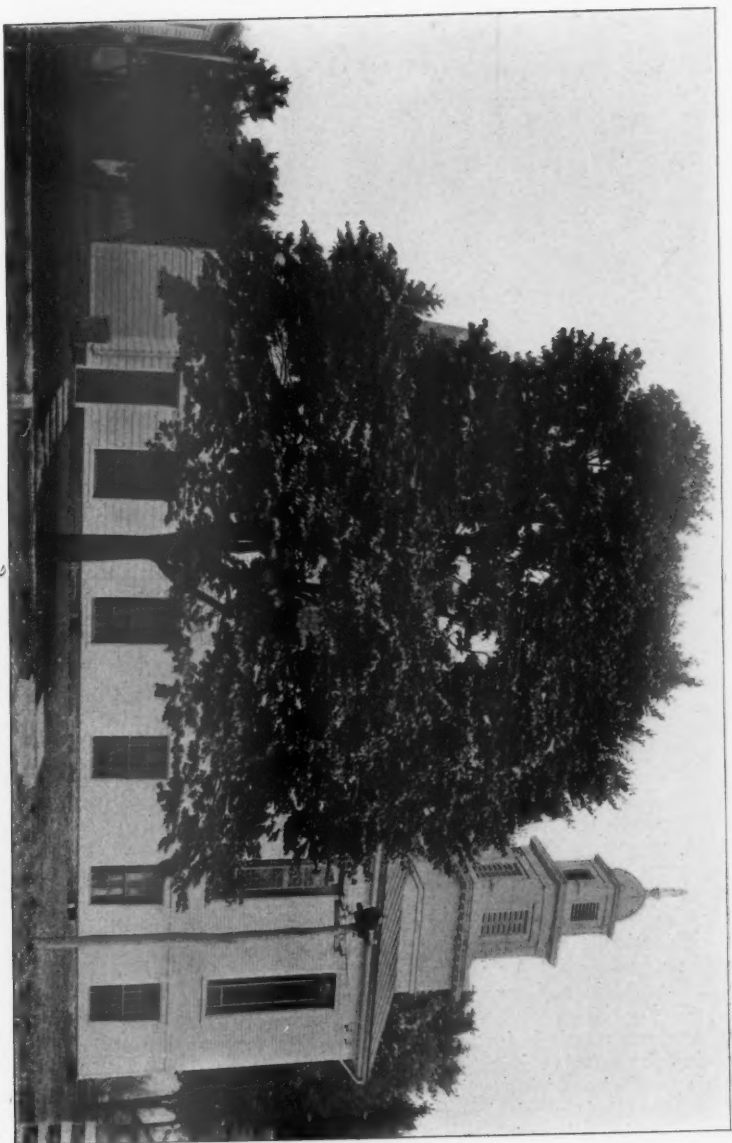
The trees selected should be healthy, straight, well-rooted specimens and as large as can be conveniently handled.



LOMBARDY POPULAR.



KENTUCKY COFFEE TREE.



SLIPPERY ELM.

PLANTING THE TREES.

We must be certain, first of all, in planting our shade trees, that those selected are adapted to the soil where the planting is to be done.

The best time to plant trees is just as soon as the frost gets out of the ground in the spring; that is, just before the sap begins to flow. The next best time is after the leaves have fallen in late autumn. This time of planting is to be preferred for certain species. A tree should never be planted in mid-summer if it is possible to avoid it.

In transplanting a tree, the roots should be kept as nearly normal as possible. As much of the root system as can be should be dug up with it, and whenever it is possible a ball of earth should be taken up with it to prevent the delicate root hairs from drying out. If no earth can be taken up with the tree, great care should be used to protect the roots from the drying action of the sun and air. It is well to cover the roots with burlap or damp straw.

The tree is usually of such a size that the larger roots have to be cut. Care should be taken to trim the ragged ends of these roots by a good clean bevel cut, the cut surface down. If this is done, the ragged end will not decay and it will sprout much more easily.

The hole which is made to receive the tree should be large enough to take care of the roots without crowding. In case much of the root system is lost in transplanting, the limbs of the tree should be cut back, the amount depending on the roots lost. It would be well to cut all trees back somewhat, otherwise they are liable to dry out. This is particularly true of trees which have been growing under favorable soil and atmospheric moisture conditions.

Fertilizing the tree is not as essential in the country as it is in the city. In the city the soil is often "made soil" or a deep soil, in which case it would be well to dig a hole much deeper than is needed for the tree and to partially refill it with rich loam and some well-rotted manure. It is well to water the tree after planting, and to do so at various intervals until it is apparent that it has made a good start.

The tree should be spaced according to the size of the crown which it will later develop. Fifty to 100 feet is the usual spacing for broad-leaved species. Such trees as the elm and the sycamore should be given the wider spacing, while most other trees require 50 to 75 feet. The tree should be set in the earth at its original level and the soil packed well around the roots. In the case of a small tree, it is well to drive one or two strong stakes in the ground beside it and securely fasten it to these stakes. Care must be taken in making these fastenings that they will not injure the tree when it is worked by the wind.

Our battle for shade has only just commenced when we have the tree in the ground. We must watch it continually, and protect it not only from fungi and insects, but from man and beast.

PROTECTION FROM FUNGI.

After maturity, practically all trees suffer from fungus troubles, commonly called rot. Different kinds of fungi attack all parts of the tree, leaves, bark, wood and roots.

To protect from fungous growth, the first problem is to protect the tree from injury, as it is through wounds to the tree that the parasites gain access to the living tissue. A perfectly healthy, vigorous tree does not suffer from fungous trouble except in rare instances. If the tree is injured in any way, a trimming of the torn parts and the immediate application of tar or heavy paint is the most efficient protection.

Careless pruning does a great deal to shorten the life of trees. If it is done carelessly, it leaves rotten stubs or torn places, which serve as the starting points for disease. Care should be taken to properly trim out all dead branches and to anticipate such branches, if possible, and trim them out before entirely dead.

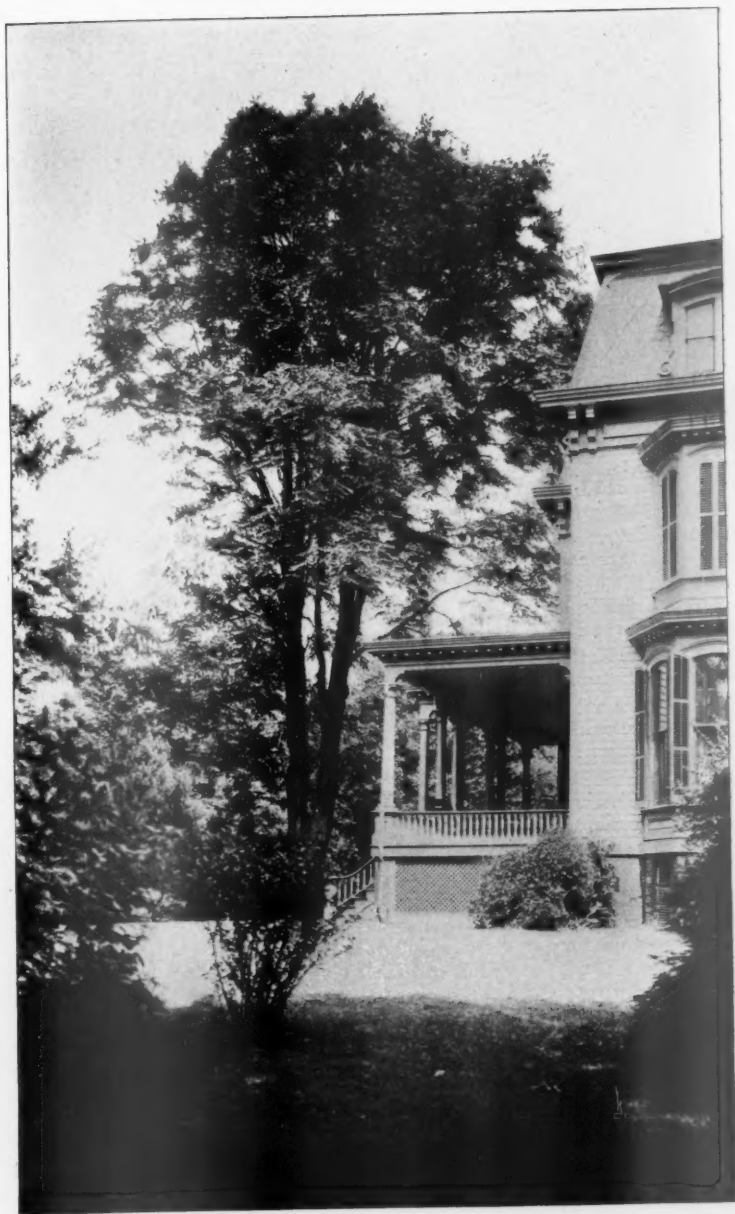
If the tree in question is growing stag headed or seems to be dying back in any way, it is probable that it can not sufficiently nourish or care for such an expanse of leaf surface and a heavy pruning may give the remaining limbs



HORSE CHESTNUT.



NORWAY MAPLE.



BLACK LOCUST.

force enough to withstand the attacks of fungi for some little time.

When the leaves are attacked by fungi, it appears sometimes by causing them to shrivel and drop off, or it may appear as small discolored spots, which later dry and break out, leaving the leaf full of holes. In the case of leaf fungi, the damage is not very great, as the leaves of practically all broad leaved trees and some conifers are shed in the fall and a new infection must be made the following spring, if the damage is to continue.

Some fungi attack the twigs and branches. Others attack the sap-wood and still others the heart wood. When fungous growth is found in the larger parts of the tree, if it is discovered before it has too strong a hold, it can sometimes be held in check by cutting out the diseased part and keeping close watch for future signs. Oftentimes, though, when we are aware that a tree is diseased, it is too late to do anything, as the fine mycelia have pierced so far into the tree structure that we can do nothing to rid the tree of this pest, and it is simply the beginning of the end. Thus we can not place too much emphasis on allowing no openings for the entrance of disease.

Some fungi, particularly those known as the rusts, at different stages of their lives live on different plants. The fungus known as the cedar apple, a disease on the red cedar, lives during one period of its life on the apple tree. If we desire to rid either the cedar or the apple tree of this disease, we can do so by destroying all of the other species which are within range of the spores.

A good example of the above occurs in the present fight of New York and other States against the blister rust of the white pine, which has been imported from Europe on nursery stock. The genus *ribes* (currant) acts as host to this fungus at one stage of its life history. The State annually inspects all plantations of this diseased stock and destroys the diseased plants. It also very carefully inspects the territory within 500 feet of any planting and destroys all species of *ribes* found within

this territory, thus destroying the disease by taking away one of its hosts.

In the case of fungous attacks to a tree, the only remedy is in the nature of a fungicide, which is sprayed or painted on.

PROTECTION FROM INSECTS.

The scope of this article will not permit taking up in detail the various insects which are injurious to trees. An attempt has been made to describe the different workings of insects and various remedies are suggested.

The question of protecting our shade trees from insects is getting to be an exceedingly important one, as there are many insects which are doing great damage. There is a likelihood that the number of highly destructive insects will be added to at any time by the importations of foreign species from Europe and Asia. Massachusetts and the United States Government have spent many thousands of dollars trying to get the gypsy and brown-tail moths under control, and yet these moths are spreading over more and more territory every year. Both of these moths came from Europe.

The insects doing damage to trees can be divided into three general classes: Biting insects, sucking insects and wood-boring insects. The biting or leaf-eating insects are those that do the greatest damage to shade trees and are the easiest to handle, as at no period in their growth, except in a few cases, are they where man can not get at them.

The life of insects has four distinct stages: First, the egg; second, the grub or larva; third, the dormant cocoon stage; fourth, the moth or beetle stage. Most insects can be successfully fought during the first or second stages, or both.

SPRAYING THE TREES.

Under biting insects we place all those insects which devour the leaves. These insects can be easily discovered in the second stage of their growth from the partially eaten leaves on the tree. There is no set time when these evidences appear, as some species hatch out later than others and some have



HEMLOCK HEDGE.



AMERICAN ELM.



SUGAR MAPLE.



WEeping BEech.

two or three broods in a single season, while others have only one.

As soon as it is evident that insects are at work on the foliage, the tree should be sprayed with a solution of paris green or arsenate of lead. The work of spraying must be carefully and thoroughly done, as a careless spraying is little better than none. Care must be taken to spray the side of the leaf that the insects are working on, usually the under side. Inasmuch as the caterpillars do not eat the poisoned parts until driven to it, a complete spraying should be accomplished.

Some kinds of insects lay their eggs in certain definite places and it is oftentimes possible to attack the insects at this stage by creosoting the egg masses. A great many insects lay their eggs in the refuse on the ground and the burning of this refuse will accomplish much good. Stone walls and rail fences are also favorite places for the eggs of some species and these should be carefully inspected.

The third stage, when the insect is in the cocoon, also often gives a chance for destruction. Such insects as the fall web worm and the brown-tail moth make very noticeable nests at some season of the year. These nests can be cut off and destroyed.

With insects like the elm leaf beetle the egg is hatched on the ground and the caterpillar must crawl up the tree to its food supply. In such cases a band of cotton batting, tree tanglefoot or tarred paper is very efficient. The caterpillars collecting below this band should be gathered and destroyed from time to time.

Thus it is the duty of the owner of trees to determine the character of the workings of the insect and decide on the proper means of control.

Photographs by courtesy of the Conservation Commission of the State of New York.

[This article will be followed by one on The Proper Protection of Shade Trees.—Editor.]

SUCKING INSECTS.

These insects consist of the bark lice and scale insects. The most efficient protection from such insects is a careful spraying with kerosene emulsion. In using the emulsion on a young tree, care must be taken not to put on so much that it soaks the ground beneath the tree, else the roots may be smothered. Whitewashing the tree undoubtedly does much good, not by killing the insects but in keeping them away. A solution of tobacco or lime and sulphur is often used to rid the trees of these pests.

BORING INSECTS.

These insects consist of round and flat-headed borers, bark beetles, etc. They are very hard to deal with, as practically all of their life is spent in the tree and they can not be exposed without killing the tree. In the case of some borers, the egg is laid on the bark, and on hatching, the grub starts boring for the woody parts. In the case of such insects, a spraying of kerosene emulsion is very good.

Borers show where they are working by small piles of sawdust. From this sawdust the hole may be found and by injecting carbon bisulphide into such a hole and then plugging it with grafting wax or hard soap, the insect will be killed. Such treatment is well worth while in the case of the maple borer, where three or four insects may practically ruin the tree.

The bark beetles are the hardest to attack and often do a great amount of damage. They do not usually attack any but weakened trees. When bark beetles are found on a tree, about the only thing to do is to cut them out.

A FOREST EXPERIMENT STATION.

John R. Strong, a lawyer, of New York City, has given to the New York State College of Forestry, Syracuse University, 100 acres of forest and a valuable summer residence in the Catskills for use as a forest experiment station. The property, given to the college without reservation, adjoins Elka Park, near Tannersville. Across the forest, an unusually interesting tract of timber, flows the Roaring Kill.

The entire area is covered with hardwood trees, with considerable hemlock and spruce. The college will begin the development of the tract at once as an experimental station. In the spring a forester will be assigned to the station and research work will be permanently established.

THE RELATION OF THE FOREST SERVICE TO THE MINING INDUSTRY

By R. Y. STUART

THE subject assigned me is a broad one, open to discussion from several viewpoints. In previous meetings of this Association, papers have been read by men of mining experience who have discussed the subject from the standpoint of one who operates a mine. It is interesting to note in reviewing the later addresses a treatment of the subject in the light of a more thorough understanding between the miner and the Forest Service. While differences still exist, they do not arise from a misunderstanding of the Forest Service policy, as in the earlier days of National Forest administration, but mainly through difference of opinion as to the control of National resources.

The speaker can not qualify as a miner either in theory or practice. My treatment of the subject shall be from the standpoint of a forester who as such has had something to do with the needs for timber of the mining industry in the Northwest and the attitude of the Forest Service toward the industry.

TIMBER CONSUMPTION BY PRECIOUS METAL MINES.

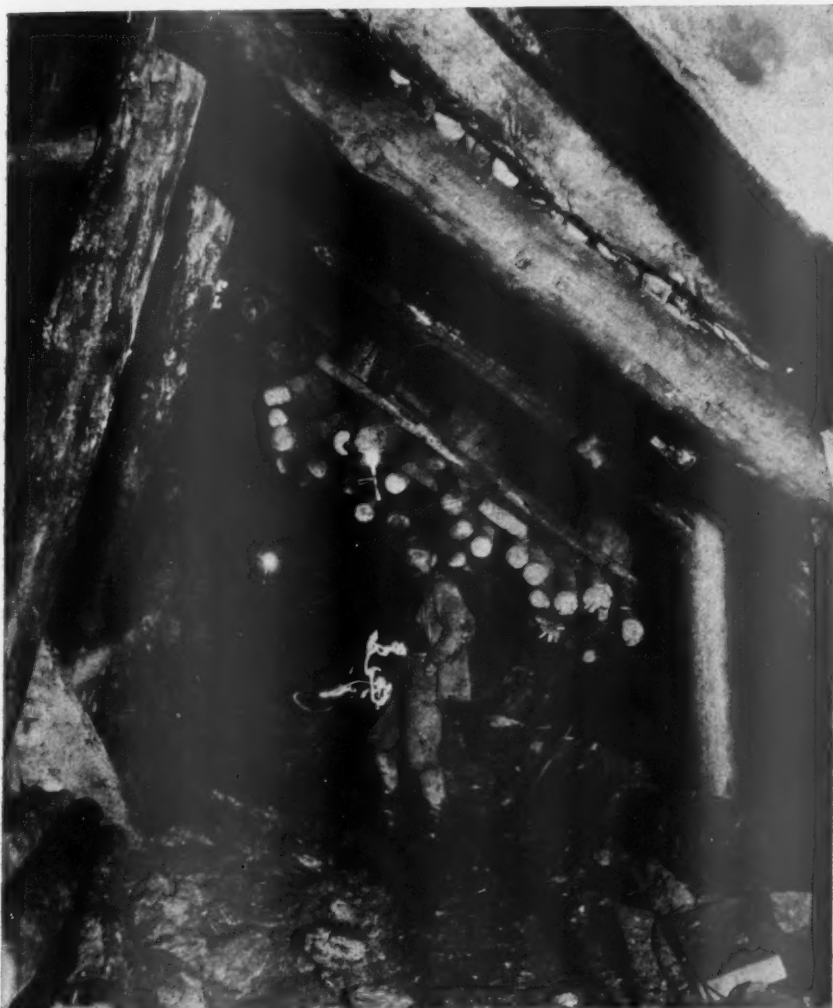
The most recent statistics on the consumption of timber in mines in the United States were gathered by the Forest Service in coöperation with the United States Geological Survey in 1905.* The report shows that of a total quantity of timber used in mines in that year of 165,535,900 cubic feet of round timber and 435,944,000 board feet of sawed timber, there was used in the mining of precious metals in the Rocky Mountains and Pacific Coast regions 15,282,500 cubic feet of round timber and 164,956,000 board feet of sawed timber, or 9 per cent of the

round timber and 38 per cent of the sawed timber, or 15 per cent of the total timber consumption by mines. This percentage does not include timber consumed by mines other than precious metal mines in those regions. The report does not indicate to what extent these mines were dependent upon National Forest timber for their development and improvement, but it is undoubtedly true that a large percentage of the timber consumed by them not secured from the claims was secured from National Forest land. The need for timber of all permanent mines is constant so that upon the exhaustion of timber from their own and other private holdings these mines will depend more and more upon timber from the National Forests.

IMPORTANCE OF INDUSTRY.

The importance ascribed to the mining industry is no more clearly indicated than by the legislation enacted for it. By the Act of June 3, 1878, the miner and the agriculturist were given authority by Congress to take timber from their claims necessary to support their improvements. The Act of June 4, 1897, providing for the administration of the National Forests, specifically granted those in search of minerals access to the National Forests for the purpose of prospecting, locating and developing the mineral resources provided there were compliance with the rules and regulations covering the National Forests. By the Act of March 3, 1891, as amended by the Act of March 3, 1901, it is provided that in any criminal prosecution or civil action for a timber trespass on public lands it shall be a defense if it is shown that the timber was cut for agricultural,

* Timber Used in the Mines of the United States in 1905," by R. S. Kellogg; Circular 49.



SMUGGLER UNION MINE.

Level No. 9 Cave-in due to decay. Timber in seven years. Near Telluride, Colorado.

mining, manufacturing or domestic purposes, under rules and regulations prescribed by the Secretary of the Interior. The miner has, therefore, by law the right to freely locate and develop the mineral resources of the National Forest and to use in the development of his claim the timber thereon. What further benefits, then, come to him from the location of his mine within the National Forests, and to

what extent has the Forest Service through the rules and regulations governing National Forests enabled him to more fully enjoy the privilege granted by Congress?

In general, mineral ground is in rough, mountainous regions and not infrequently where the supply of timber and water is limited. Water and timber to a mine, are indispensable. Mineral land on a desert without trans-

portation facilities to supply water and timber must remain undeveloped, until these needed requisites can be supplied. The conservation of timber and water are of prime importance to the industry, since its continuance is so dependent upon them. While the need for a continual supply of timber has been fully appreciated by those engaged in mining, the attitude of the individual toward its conservative use has been tempered largely by his motives and the permanency of his mine.

It was a practice at one time for prospectors to start fires for the purpose of reducing the forest cover and permitting a more ready search for surface outcrop. The dire consequence in destruction of timber and property from this measure and the increasing need for timber in mine development has served as an efficient check on this

practice, and it has been practically abandoned. The non-stability of the average prospector in his search for minerals and the desire to pass on to other apparently better prospects makes him incline toward indifference as to the condition in which he has left his previous workings and the timber upon it. He is after mineral, and the importance of a timber supply does not occur to him until he has opened a pay streak. This characteristic, however, is not confined exclusively to miners.

Others, in full appreciation of the importance of timber to mining, have attempted to obtain title to timberland under the guise of a mineral location, either for the purpose of holding up a mining company operating nearby and in need of timber or of selling the timber to lumber companies or others.

These tendencies and abuses, which



SECTION OF MUD SILL AND TRESTLE BEAM REMOVED FROM A COAL BUNKER, IN WEST OAKLAND, AFTER SEVEN YEARS' SERVICE. THE MUD SILL WAS CREOSOTED. THE BEAM WAS NOT TREATED. WEST OAKLAND, CALIFORNIA.

are the exception, are as objectionable to the bona fide miner as to the Forest Service. Their practice has made the course of the legitimate miner the harder and their correction is to the mutual advantage of the miner and the forester.

PROTECTION OF NATIONAL FOREST RESOURCES.

It is the duty of the Forest Service to protect, improve, and lend encouragement to the development of the resources entrusted to its care. Their adequate protection and improvement demand that no abuse shall be made of the privileges conferred by law for their use and development. Where necessary to a fulfillment of this duty, the Forest Service has not hesitated in its attempts to correct the abuses, and it has been this standard of the Forest Service which in the past has been misunderstood and misinterpreted but which is to a greater and greater extent securing the endorsement of those who have the permanency of the mining industry and all National resources in mind. Every encouragement is given to legitimate mining on the National Forests and, in common with other users, the miners' needs are given every consideration. In making the National Forests of the greater usefulness and benefit to the Nation, the Forest Service needs the assistance of the miner in the proper protection, improvement, and development of National Forest resources, just as much as the miner needs the benefits secured from the Forests. A full appreciation by both parties of the purposes and needs of each is essential to effective cooperation.

MINER'S NEED OF TIMBER AND WATER.

In most mining operations, support must be given to the sides and roofs of workings. Occasionally the sides and roofs are self-supporting. For supports timbers are universally used. Its use has been most natural, due to its adaptability for the purpose and its accessibility to the mines. In relation to total costs of ore production, the cost for timber is small, so that it has been

practicable to pay transportation charges on its shipment for reasonable distances. It has been estimated that mine timbers seldom cost more than 10 per cent† of the cost of the ore.

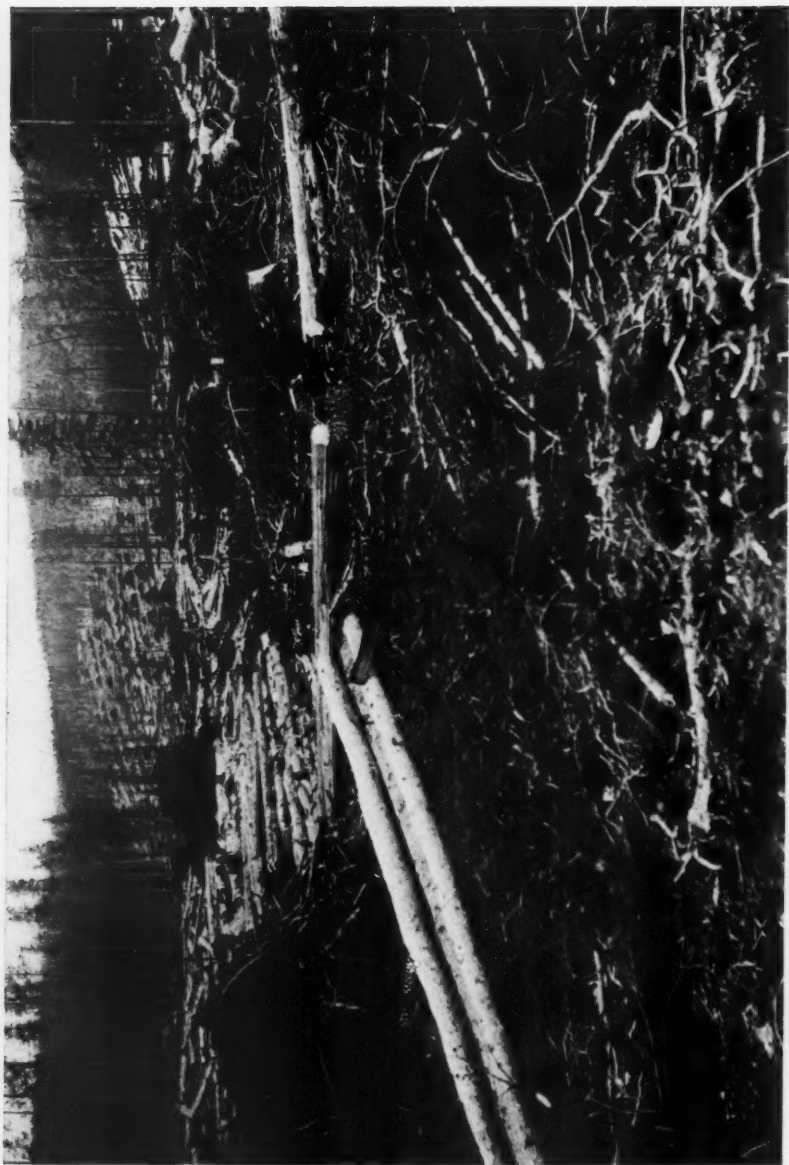
It is not probable that a more suitable material for general mining use than timber will be found. It is light in weight so that it can be readily transported; it is readily adapted to any required size or shape; it is easy to put in place and replace; and it gives warning before breaking. In addition to its use underground, timber is used by miners for surface buildings and structures and other improvements. Substitutes, such as iron and steel, have been tried but their use discontinued on account of their weight, cost and non-adaptability.

Water is as essential to mining operations as timber. In placer workings an adequate and constant supply is necessary for their operations. For plant and domestic purposes it is needed in all operations.

HOW TIMBER IS OBTAINED FOR MINING PURPOSES.

As previously mentioned, the prospector and miner can use the timber from his claim for the development and improvement of the claim. Where no timber exists on the claim or that which existed there has been used in the development of the claim and more is needed, it may be obtained from the National Forests under free use permit. The free-use policy of the Forest Service is most liberal. In the fiscal year 1912, 38,749 free-use permits for a total of 123,233,000 board feet were issued. Timber is granted free of charge to miners and prospectors who are in need of timber from the National Forests for the development of their claims. In cases of emergency, timber may be taken prior to the issuance of a permit, but in such cases the recipient is expected to notify a Forest officer at his earliest opportunity, in order that a permit may be issued and a record of the transaction had. When the property is producing ore for shipment the owner of the mine is no longer deemed

† "The Preservation of Mine Timbers," by E. W. Peters; Bul. 107.



CUTTING OF THE ALLEN COUNTY TIMBER SALE IN FRENCH GULCH, SHOWING THE WAY WORK IS BEING CARRIED ON, THE PILING OF BRUSH AND THE SEED TREES LEFT STANDING. ALSO SHOWS CLASS OF TIMBER. DEERLODGE COUNTY, MONTANA. (DEERLODGE NATIONAL FOREST.)

entitled to the free-use privilege, but he can secure at reasonable cost from the Forest all timber needed by him. The policy in free use is to confine the issuance of permits to those who are in need of timber to initiate and develop their claims, whether mining or agricultural, and not to extend it to those who through the improvement and productiveness of their claims may reasonably be expected to purchase.

LOCAL INDUSTRIES FAVORED IN SALES.

It has been, and is, the policy of the Forest Service to favor local industries in sales of timber from the National Forests, so far as consistent with the Government's interests. The mining industry within and adjacent to the National Forests has shared in the benefits of this policy. No sale of timber for general market distribution is made from a National Forest when the immediate locality or section is in present need of the timber or when the future need of all the timber for consumption by the locality can be foreseen. This is accomplished by limiting the cutting each year, or each period of years, to the amount of timber produced on the area involved during that year or period. The cutting is confined, so far as practicable, to the over-mature and mature trees, leaving the immature stands and young growth for subsequent cutting. Under this plan yearly or periodic cuttings can be made without injury to the forest, and there is on hand constantly a reserve stock. In exceptional cases, as where there is an excessive amount of mature timber or where there is an unusual need by local communities for a greater quantity of timber than is produced, a cut in excess of the annual or periodic yield is authorized to meet the temporary exigency.

The advantage of this policy to the small timber operator and the miner is obvious. The owner of large tracts of timber is in a position to provide for his or his company's future needs, while the man of small means of today and tomorrow is dependent upon others for his timber. The National Forests to the latter represent an assurance of a constant supply of timber. As an indi-

cation of the extent to which sales of timber from the National Forests are made for local use, there were made in the fiscal year 1912 5,179 sales amounting to less than \$100 in value each, 378 from \$100 to \$500 each, 78 from \$501 to \$1,000, and 73 from \$1,001 to \$5,000, or 99 per cent of the total number of sales. It is estimated that approximately 65 percent of the entire amount of timber cut under sales from the National Forests for that fiscal year was for local use.

MEETING LOCAL DEMANDS.

A striking example of the application of the Forest Service policy in meeting the local demand for timber is that existing at Butte, Montana. Butte, as is well known to you, is one of the largest, if not the largest, copper mining camps in the world. It is built up and maintained on its production of ore. In the early history of the camp, the surrounding hills were well timbered and furnished adequate timber to meet the needs of the miners. The constant cutting of the surrounding timber and repeated fires made it necessary in a comparatively short time for the miners to bring their timber from more distant points. While timber from the National Forests had been cut and went into the Butte market prior to 1906, full advantage of the available supply of timber from the National Forests was not taken until that time, the operators depending upon timber secured from timber men operating on their own claims or other private holdings.

There are consumed in the Butte mines annually approximately 250,000 stulls and 130,000 logging poles. The former are 16 feet long and average 9 inches in diameter at the small end; the latter are also 16 feet long and are from 3 to 4 inches in diameter. This represents an aggregate amount expressed in board feet of more than 10,000,000 feet. There are also required each year for the smelters at Anaconda and Great Falls, Montana, approximately 50,000 converter poles, from 24 to 30 feet in length, and 3 to 4 inches in diameter.

Since 1906, the demand for mining timber for the Butte mines has cen-



SHOWS CUTTING OF THE ALLEN COUNTY TIMBER SALE IN FRENCH GULCH. NOTE THE LOW STUMPS COMPACT PILING OF THE BRUSH, ALSO THE SEED TREES, AND THE MANNER IN WHICH THE SALE HAS BEEN CONDUCTED GENERALLY. DEERLODGE NATIONAL FOREST, MONTANA.

THIS VIEW TAKEN ON SALE NO. 1, ALLEN COUNTY, IN FRENCH CULCH. SHOWS THE STUITS CONVERTED POLES LAG-
GING AND OTHER MATERIAL, BANKED DOWN TO THE TRAMWAY, TO BE HAULED TO THE PLUME FOR FLUMING.
OVER 30,000 STUITS ARE BANKED IN THIS PLACE. DEERLODGE NATIONAL FOREST, MONTANA.



tered on the Deerlodge National Forest, which contains the most accessible National Forest timber to Butte, and arrangements have been made by the Forest Service to meet the demand through sales of timber to local operators. The largest existing sale was made in 1910, involving a cut of 100,000,000 board feet in five years. Owing to the need for the smaller sized mining timbers and cordwood, it has been possible to secure thorough utilization, the contract stipulating that the timber shall be cut to a minimum diameter in the tops, of $2\frac{1}{2}$ inches. Not all of the material, however, goes into the Butte market, some of it not being in demand there, or suitable for mining purposes. This surplus is sold locally as sawtimber and cordwood and such mining timber as can not be absorbed by the Butte or other local mines finds a market in the coal mines of Utah and Wyoming. The contract further provides that at least 55,000 stulls 8 inches and over in diameter at the small end and not more than 90,000 stulls of this size shall be cut each year. The established minimum serves as a protection to the mining industry in insuring it a large portion of the cut from this sale in stulls, and providing for a maximum prevents a monopoly of the Butte stull supply to the operators from this sale. The maximum limitation can, however, be waived in any one year in the discretion of the District Forester. In addition to the sale mentioned, there are a number of sales on the Forest to smaller operators who compete successfully with the larger operators in entering the Butte market.

At the time the first sales on this Forest were made there was insufficient data at hand with which to determine whether the Forest produced sufficient timber annually to meet the Butte demand for mining timbers. To determine this point reconnaissance projects have been conducted and from the data secured it is estimated that there is produced on the Deerlodge National Forest sufficient timber annually to furnish a constant supply of timber to the Butte mines in addition to meeting the needs of local settlers and residents. Provision to meet this demand is one of

the main features of management in the proposed forest working plan.

The life of timber in all underground settings is short at most. The danger incident to breaking timbers and the expense attending their replacement have led to investigations to determine ways and methods by which their period of service and usefulness could be extended. Those mines with sufficient ore in prospect to warrant extensive improvements and preparations for permanency have been mostly concerned, not only from the standpoint of cost, but to avoid the necessity for replacement. In addition to the strain from weight sustained, timber in mines is subjected to rapid deterioration through wear, breakage and fire, waste, decay and insect attack. It was found in a recent study[‡] conducted by the Forest Service that the greatest damage (50 per cent) results from decay and insects, 25 per cent from waste, 20 per cent from breakage and fire, and 5 per cent from wear. The study pointed conclusively to the need for preservative treatment of timbers used in all permanent gangways and tunnels, and its economy not alone in increasing the life and usefulness of the timber, but in eliminating the great cost of replacement and maintenance. A further factor, not usually considered, is the extent to which the available timber supply is conserved by methods adopted for the preservative treatment of timbers used. Various projects have been started by the Forest Service in cooperation with mining companies for the preservation of the timber used by them in underground work. In addition to those handled by cooperation, there are a number of mining companies operating such plants independently.

WHAT THE FOREST SERVICE HAS DONE.

In conclusion, let me briefly review the attitude of the Forest Service toward the mining industry and its efforts to make the relationship beneficial.

1. It has supplemented the legislation passed by Congress in the interest of the mining industry with a very liberal policy in supplying prospectors and miners with timber from the National

[‡] David T. Day: "Statistical Relation between Forestry and Mining."

Forests for the development and improvement of their claims free, or at reasonable cost.

2. It has given every encouragement within its power to legitimate mining.

3. In the administration and protection of the National Forests, it has prevented the acquisition illegitimately, of public lands within the National Forests for purposes other than mining under the guise of the mining laws.

4. The needs of the mining industry for timber for the present and future are always considered in formulating plans for the management of the National Forests.

5. The Forest Service in its studies of the preservative treatment of mining timbers is furnishing information of great value to the mining industry.

6. In common with other users of National Forest resources, the miner is directly benefited by the National Forest administration in protection from forest fires and in the insurance of a constant supply of water through the protection of watersheds within the National Forests by the regulation of the cutting of timber from them.

CO-OPERATION ESSENTIAL.

The National Forest administration can be strengthened through assistance

from the mining industry in giving its support to the position taken by the Forest Service of encouraging legitimate projects and discouraging illegitimate projects and speculations; in conserving the timber supply by economic use; and in the protection of the National Forests from fire.

Thorough coöperation between the mining industry in the West and the Forest Service is highly desirable, and it is gratifying to observe that the spirit and material accomplishments of such coöperation are becoming more and more realized. I know of no better instance of this coöperation than that displayed at the time of the disastrous fires of 1910. At that time I was associated with the District Office in Missoula, Montana, the district in which the greatest loss in life and property was sustained. The great services rendered by the prospectors and miners in that catastrophe are typical of the stoutness of heart and purpose of the class of men who search for minerals. With a coöperative spirit of the character then displayed and a common desire to promote the public good, the Forest Service and the mining industry will become more powerful factors in the conservation of our National resources.

COMING MEETINGS

March 4—Northern Forest Protective Association, Marquette, Mich. Annual meeting.

March 6—Northwestern Iowa Retail Lumbermen's Association, New Hotel Martin, Sioux City, Iowa. Annual meeting.

March 6-7—Southern Retail Lumber dealers' Association, Jackson, Tenn. Annual meeting.

March 20—North Carolina Pine Association (Inc.), Monticello Hotel, Norfolk, Va. Annual meeting.

March 6-7—Annual meeting of the National Wholesale Lumber Dealers' Association, at the Chelsea Hotel, Atlantic City, N. J. E. F. Perry, secretary, 66 Broadway, New York City.

March—Last week—Quarterly meeting Board of Directors of the American Forestry Association at Asheville, N. C.

April—Utah Retail Lumber Dealers' Asso-

ciation, Salt Lake City, Utah. Annual meeting.

April 8-9-10—The twenty-seventh annual meeting of the Lumbermen's Association of Texas, at Beaumont, Tex. J. C. Dionne, Houston, secretary.

April 10—Lumbermen's Exchange of Philadelphia, at Philadelphia, Pa.

April 10-12—National Supply and Machinery Dealers, American Supply and Machinery Manufacturers, Southern Supply and Machinery Dealers' Association, Claypool Hotel, Indianapolis, Ind.

May—National Lumber Manufacturers' Association, Kansas City, Mo. Annual meeting.

June 5-6—National Hardwood Lumber Association, Hotel Sherman, Chicago, Ill. Annual meeting.

THE NEW EASTERN NATIONAL FORESTRY

By WM. L. HALL, *Assistant Forester, Forest Service.*

FOR ten years the American Forestry Association labored to have National Forests established in the Southern Appalachian and White Mountains in order that the great forests of those regions might be brought under the protective care of the Federal Government. It is now possible for the first time at a meeting of this Association to announce that this long-desired object has in part been accomplished. Under the Act of March 1, 1911, commonly known as the Weeks Law, the United States has acquired or holds under purchase contract 291,314 acres of land within the two regions. Authority has been given by Congress for the Forest Service to begin the pro-

tection of these lands as soon as they are placed under contract. Therefore this whole area is now under the protection of the United States.

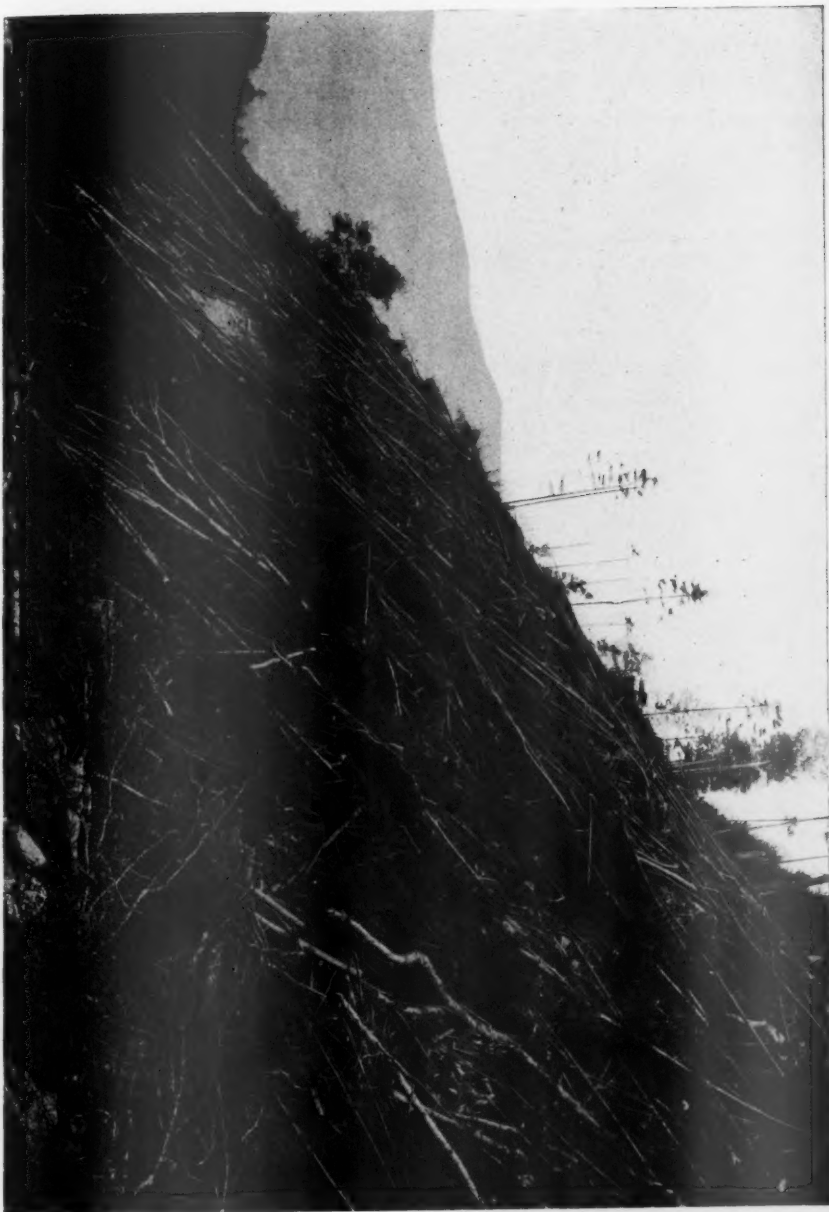
Of the 291,314 acres acquired or under contract 219,062 acres are in seven localities in the Southern Appalachian Mountains. The lowest price paid for lands in the Southern Appalachians is \$1.16 per acre, the highest \$15 per acre and the average is \$5.60 per acre. Some 74,611 acres of this land is virgin forest, 143,303 acres are culled of the best timber or cutover. Some 44,307 acres are barren or burned so as to be unmerchantable.

In the White Mountains purchase contracts cover 72,252 acres, and in ad-



GROUPS OF EXCELLENT THREE AND FOUR LOG YELLOW PINE ON LAND IN OCONE COUNTY, SOUTH CAROLINA, OFFERED FOR SALE UNDER THE WEEKS LAW. THE OPEN CONDITION IS DUE TO FIRE.

SCENE ON THE SOUTH SLOPE OF MT. LINCOLN IN THE WHITE MOUNTAINS OF NEW HAMPSHIRE, SHOWING THE EROSION
ON TRACT OF VIRGIN SPRUCE AND PAPER BIRCH.





GENERAL VIEW OF MT. JEFFERSON, MT. WASHINGTON AND MT. MONROE WEST SLOPES, WITH MT. BOWMAN VALLEY IN THE FOREGROUND AND A VIEW OF THE SOUTH FORK OF ISRAEL RIVER ON THE LOW AND BURBANK GRANTS, WHITE MOUNTAINS, NEW HAMPSHIRE.

dition 9,100 acres have been approved by the National Forest Reservation Commission and purchase contracts covering them are now being prepared. The lowest price paid for lands in the White Mountains is \$4 per acre and the highest \$10.50 per acre, the average being \$6.18. In the White Mountains the only virgin timber purchased consists of small parcels on some of the larger tracts. Some of the land is cut-over for spruce and contains a valuable stand of hardwoods. Other portions contain valuable second growth, some of which is now merchantable, some below merchantable size. In the North as in the South some of the cutover land has been damaged by fire. The most serious burns, however, occurred as much as nine years ago and the ground is again covered by a vigorous growth of young trees.

There is now pending before the National Forest Reservation Commission some 80,000 acres which the Forest Service has recommended for purchase. Final approval in some of these cases awaits only the working out of certain details which will be important in protecting the lands when once acquired.

In addition to the lands acquired under contract or pending before the Commission the Forest Service has examined 750,000 acres. Some of these lands have been reported upon, negotiations have practically been concluded with the owners and the purchases will be recommended to the Commission at an early date. In other cases reports and maps are now being completed so that negotiations can be taken up with the owners during the present winter. Among the lands examined are certain tracts, some of them large and of great importance for which negotiations have failed on account of the high prices at which the lands are held by the owners.

In has been the position of the Forest Service and it has been strongly supported by the National Forest Reservation Commission that lands will be bought only when they can be had at prices which represent present commercial values. If owners are not willing to accept such prices they must continue to hold their lands or look elsewhere for a purchaser. The regions

in which the Government is purchasing are large. Its plans are of such extent and are so shaped that the final success of its undertaking does not depend upon the acquisition of any one particular tract.

The Government is now ready to consider the purchase of land in eighteen separate purchase areas, seventeen in the South, one in the North. The question will be asked why is it necessary to restrict purchases to certain areas? It is necessary for the reason that the appropriations are limited as to amount and extend only until June 30, 1915. We do not know that further appropriations will be made for this work after that time. We must therefore so direct the work that when appropriations now provided are exhausted the United States will have its lands well grouped into bodies of convenient size and shape for administration and so distributed over the Southern Appalachian and White Mountain regions as to be of the greatest importance both in general fire protection and forest conservation. If with the \$8,000,000 which Congress has made available until expended one million acres of land can be obtained in the form of well assembled tracts of from 25,000 to 100,000 acres each, this requirement will be met. Such a start will then have been made that the work can stand alone even if several years should elapse before additional appropriations are provided by Congress.

Great progress has been made by the Geological Survey in its examinations under the Weeks Law. Before any land can be approved for purchase by the National Forest Reservation Commission, it must be examined by the Geological Survey and a report made showing that the control of the land by the Federal Government will promote or protect the navigability of the stream on the watershed of which it lies. The Geological Survey has now rendered favorable reports covering completely eleven of the eighteen purchase areas, while on four others its favorable reports cover parts of the areas. Reports which have been submitted cover 4,226,716 acres or 66.2 per cent of the entire acreage of the purchase areas.



A VIRGIN STAND OF SPRUCE AND WHITE BIRCH ALONG RAMOND PATH, PEABODY RIVER, MT. WASHINGTON, COOS COUNTY, NEW HAMPSHIRE.

No unfavorable reports have been submitted.

The reports of the Geological Survey made after painstaking study of conditions on particular areas and limited strictly to the areas examined, leave no room for doubt that forest maintained in good condition upon the Southern Appalachian Mountain watersheds prevents excessive erosion and consequently protects the streams throughout their courses from the silting up of their channels. In the White Mountains erosion is but slight but the forest has been found to exert a direct and large influence in making more

regular the flow of water in the stream channels.

All the streams which drain the Southern Appalachians and White Mountains are navigable and it will be remembered that the protection to navigable streams was the basis upon which Congress finally approved the Weeks bill. The Committee on the Judiciary of the House of Representatives after thorough consideration affirmed that

"Congress has the constitutional power to acquire lands and forest reserves in a State by purchase, condemnation, or otherwise, as an aid

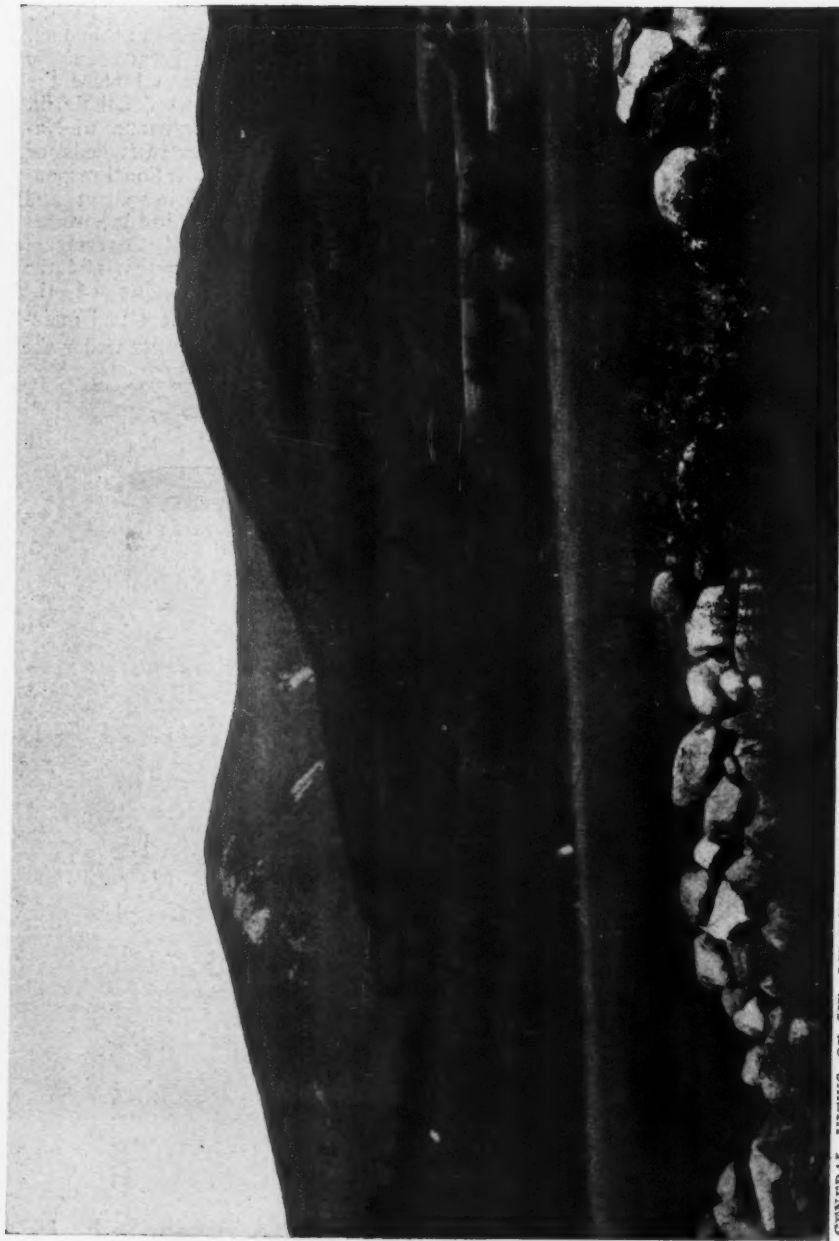
to navigation, if it be made to appear to Congress that such reserves would materially or substantially aid navigation."

In accordance with this authoritative opinion the bill was changed to make the protection of navigable streams its direct object and the Geological Survey was designated as the authority to report upon this important point in all lands sought to be acquired and in this amended form the bill became law. The favorable reports of the Geological Survey are therefore of great importance in that they show in the first place that the relationship between forest

and the flow of navigable streams which Congress assumed to exist when it passed the Weeks Law does, in fact, exist and that it is of great economic importance. In the second place the favorable Survey reports definitely fix the acquisition and maintenance of National Forests on the watersheds of navigable streams as a National responsibility because the development and maintenance of the navigable streams is duty of the Federal Government recognized alike by Congress and the Courts since the founding of the Nation. The establishment and maintenance of National Forests under the



AN UNLUMBERED FOREST OF SHORT LEAF PINE ON THE COX LAND, OCONEE COUNTY, SOUTH CAROLINA. THE STEEP SLOPES AND OPEN CHARACTER OF THE STAND ARE DUE TO REPEATED GROUND FIRES.



GENERAL VIEWS OF MT. LIBERTY AND MT. FLUME IN THE WHITE MOUNTAINS OF NEW HAMPSHIRE SHOWING ERODED SLOPES. THE SLIDES OCCURRED SINCE THE BIG FIRE OF 1903.

Weeks Law therefore meet a National need and aid in solving a National problem—that of the development, utilization and protection of the navigable streams.

There were those before the Weeks bill became a law who maintained that the objects sought to be accomplished were such as to place the responsibility for action on the States rather than on the Federal Government. In fact so stoutly was this view maintained that the first and second sections of the Weeks Law were inserted solely for the purpose of encouraging the states to protect their forests and to give authority if necessary for the states to take concerted action in doing so. So far as known no state has made overtures to any other state for co-operation in this direction nor does there seem to be any movement for concerted action between them. The only state within which the Government is considering purchases which is itself acquiring land for forest purposes on any considerable scale is New Hampshire. That state has acquired 7,000 acres including the noted Crawford Notch in the White Mountains. Considering that over 600,000 acres in that state should be under careful control it does not appear that the state alone would be able to cope with the situation.

Of the Southern Appalachian states, Maryland alone has had a fire protective system which enabled it to avail

itself of the Government's aid in fire protection under Section 2, of the Weeks Law. Kentucky has now provided a fire protective system and has thus qualified to receive Government aid. Doubtless other Southern Appalachian States will prepare to come in under this plan within a year or two, but with the very best that can be done most eastern states can only assume part of the responsibility of putting an end to forest fires. They can not take the responsibility of purchasing and carefully protecting mountain lands in order to put an end to unwise clearing and take the necessary steps to control other uses which are tending to destroy the forest cover on the mountain slopes. The problem of protecting the mountain watersheds therefore is one which directly affects the interests of the United States but does not so directly affect the interests of particular states nor do the states with the possible exception of two or three show themselves either inclined or ready to cope with the problem.

With the situation as it is there is but one course to pursue. The Federal Government must go on with its program with the resources that have been made available and demonstrate the utility of a system of National Forests on the headwaters of the important Southern Appalachian and White Mountain navigable streams.

TO INSPECT BILTMORE FOREST

DIRECTORS of the American Forestry Association, and a number of guests, will during the last week in March inspect the forest and the nurseries on the Biltmore estate of Mr. George W. Vanderbilt, near Asheville, N. C., and will also endeavor to find time for a trip to Mt. Pisgah over a fine new road recently completed. This will be the occasion of the spring meeting of the Board of Directors, and a number of matters of importance are

to be discussed and preparations made for encouraging, in Congress and in the State Legislatures, legislation favorable to forest conservation, and opposing any legislation which aims to take the control of the National Forests from the Department of Agriculture and the Department of the Interior.

The party will leave New York, Philadelphia and Washington on the afternoon of Monday, March 24, and return on Thursday, March 27.

LUMBERING AT ANTICOSTI.

Lumbering forms an important industry at Anticosti, the island in the St. Lawrence, owned by Mr. Henri Menier, the Paris financier. Four vessels are chartered for the conveyance of pulp and lumber, and next year four more are to be chartered. Some of the pulpwood has been sent to ports on the Great Lakes and also on the Atlantic Coast.

THE STATES' RIGHTS QUESTION*

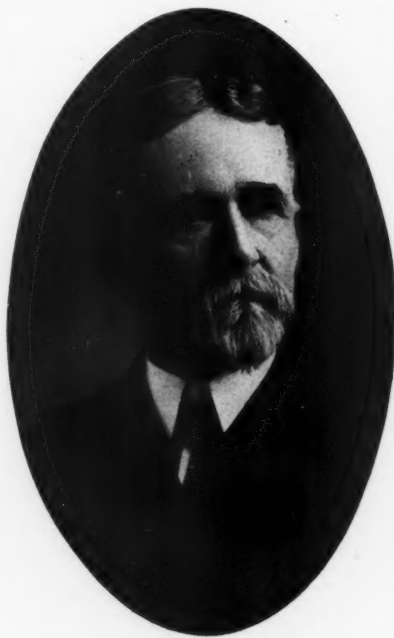
BY HON. JOHN LAMB, OF VIRGINIA,

Chairman of the Agriculture Committee of the House.

GENTLEMEN of the association, of which I happen to be a member and whose deliberations I have been very much interested in, I thank you for calling on me tonight and for saying that I am limited to a few remarks. I suppose my friend said that because he bears in mind that when a Congressman gets a throw-up, there is no chance to put him down except by the Speaker's gavel. I was very much interested in the marked speech of my friend, the forester, and I think if he had extended his remarks a little and put in something from his annual report—which I suppose every member of the forestry committee has read—I think he would have made plain to you of the magnificent work that he is doing at the head of that department and I think I have the opportunity to judge of his splendid work along his line. (Applause.)

Do you ever stop to think, members of this association, that Mr. Graves presides over a greater territory than even Alexander the Great when he had conquered the known world and wept because he had no unknown worlds to conquer? Have you ever thought that he presides over and directs an organization that covers a territory greater than the mighty Napoleon presided over after he had laid hold of all of Europe that he could lay his hands on, that there are 200,000,000 acres of land in this forestry and that that covers a territory as great as New England, New York and Pennsylvania combined? Have you thought that there are untold billions of feet of lumber under the protection and direction of the Congress of the United States and that our friend, Mr. Graves, must have a tremendous responsibility? Would you not think so when he talks like he does this evening, and by the way, this is not the first time I have

heard him speak. It is my business to catechize him and he will tell you that I have done this frankly and candidly oftentimes. It is a striking coincidence, gentlemen, that on this very day the Agricultural Committee has been considering the forest appropriation. My friend here who is not quite as good a Democrat as I am sitting on my right,



CONGRESSMAN JOHN LAMB OF VIRGINIA. CHAIRMAN OF THE AGRICULTURAL COMMITTEE OF THE HOUSE.

the ranking minority member, will bear me evidence that today, regardless of politics, looking to conservation we have been supplying the sinews of war by which Mr. Graves and his coagitors can administer this splendid estate of his. I wonder that he sleeps at all at night, yet he looks like he sleeps about

twelve hours each day. (Laughter.) Some of you who may be struggling like some people to keep the wolf from the door, may think he has a good salary and the United States is furnishing all this money and this keeps him in this good humor. (Laughter.)

Now, gentlemen, to be serious, and I think I can talk frankly and candidly with you gentlemen, I am the oldest member of the Agricultural Committee. I have been a member of Congress for sixteen years and I have helped, either as the minority member and now the chairman in the majority party, to make up these appropriation bills, and let me say that the women got after me last year. They are interested, as they seem to be about everything in this country, and when they get to writing you, you look out, foresters and all. I would not mention it except I saw my picture in one of the magazines and a reported interview of mine from these ladies.

My friend the forester is here and he and I went over the same ground and we were determined we would not give quite so much money to the forests last year, because you know a committee of the House informed us that we must hew close to the line; the President said so and the committee said so, and therefore we cut down on the emergency fund because we felt that in view of the fact that a great fire had occurred in 1910, it will be six, seven or possibly eight years before such another fire would occur. We might have been guessing, but we guessed accurately, and I do not believe Brother Graves has used \$10,000 of that emergency fund, so we were right in spite of the criticisms of the ladies.

Some of you have undoubtedly read the *Evening Star* of today. A distinguished gentleman, who many of us know, and every member of the Agriculture Committee knows, suggests perhaps that certain interests will do all they can through this much-talked-of State right to formulate some plan by which the tremendous forests that you are to conserve shall be turned to their respective commonwealths. I have asked some people some times where

they live, if all of them lived in the woods, that it seemed to me a third or a half of that territory in that State was in the forest reserve, but where not too much lands have been converted into forests in that or any other—we need not stop to discuss here tonight—we know that we have better arrangements by which all that is suitable for homesteads shall be early transferred to the homesteads of this country and we know very well that the Congress of the United States, in our own party at least, has no idea of turning back these forests to those States. (Applause.)

There is a member of my committee here tonight who is also a member of the Public Lands Committee, and I asked him this evening if he had ever seen a bill for that purpose anywhere and he said no. Then it was intimated, gentlemen, that it might have been in the utterances to which I referred to this evening, that the Democratic party possibly would not do justice to this matter. I want to ask you gentlemen when the Democratic party ever sought to destroy any interest in this country affecting the rights and liberties of the people of the United States. (Applause.) I want to ask you if this very conservation business was not begun under Grover Cleveland? (Applause.) We have no politics in the Agricultural Committee and my friend here knows exactly what I mean, and I will confine myself to the history along this line. I notice some Virginians here. Virginia is always somewhere in every audience, no matter where you go, and Virginians are not only fair, but as you know, my friends, they are claiming the earth and the fullness thereof. (Laughter.)

The State of Virginia ceded to the general Government years ago an immense territory and would you believe it, as prophetic as it may seem, the results under which they did it provided that the public lands contained in that territory should go to the divisions of States that were carved out of it. That is a remarkable fact in history.

If you gentlemen will take the splendid report of the forester you will see

that these States, not the States in their own capacity, however, complained that the forests ought to belong to the State. The States themselves are better off now than they would be if they owned these forests. The strong arm of this great Government is guarding these forests for future generations. One-third of the benefit coming from the forests, or in other words, the results of the grazing and the sale of timber, now go to the State, and when this great enterprise, which we speak of as conservation is perfected and their sales, amounting to six billions of feet, equal to \$15,000,000 a year, these States will get \$5,000,000 for their schools and their roads. Mr. Graves elaborates that splendidly in his report. Gentlemen, do not fear anything from the Democratic party as against your conservation interests. (Applause.) The Democratic party is not going to destroy anything in this country, save the boll weevil and all these interests that would seek for their own personal aggrandizement to destroy the values of this country by confining all of the moneys of this country into the hands of a few to the detriment of a great mass of this country. If I chose to go into politics now it would be an easy matter for me to show that for sixty years the Democratic party served every interest of this country to the very best advantage, and that the highest prosperity we ever enjoyed in any decade of this country's history was between 1840 and 1860, under Democratic rule.

I am glad to see so many young men here tonight. I said as you were gathering in the room adjoining that I believed that I was the youngest man present, but when the newly elected

president of this association walked in and was introduced to me, I thought I was not the only old man here, and perhaps I was near his age. This great work in which you are engaged is for the purpose of preserving these forests for your children and your children's children. If you want any argument for the importance of it, yea, the necessity for it, gentlemen we might point you to France and many other European countries who were striving to do what we are striving to do now under the Weeks Appalachian Bill. What better can you do than to look out for those who shall spring from your loins? How true is it that a man looks upon his children only as being new hopes. In himself he may be the resurrection in his son.

Gentlemen, I think I owe you an apology for going beyond the few moments the presiding officer suggested to me. This is an interesting subject; it bristles with importance. A man who has been chairman of the Agricultural Committee and every year has made up a bill affecting the interests of this great matter in this country, when unexpectedly called upon can give any reason for the space that is in them. May you be successful in this work—each one of you individually and collectively. May all the consolation and comfort that can come from a consciousness of duty, faithfully and honestly performed, be yours, and then you shall share in all the blessings and your children in that which will come to us from a proper preservation of the great industry and interests of this country, and as time rolls on methinks that the sun shall never look down upon a happier people or a more prosperous land. (Applause.)

*Address at the annual meeting of the American Forestry Association at Washington, D. C., Jan. 8, 1913.

CHIEF FORESTER OF IRELAND HERE.

Sir Horace Plunkett, the chief forester of Ireland, spent several days in Washington recently, on his third trip to this country and expressed himself as very much interested in the work which is being done here for the preservation of the forests. He believes when the American public is thoroughly awakened to the great need of forest conservation that practically every owner of land suitable for timber will be growing it.

THE SPREAD OF THE FORESTRY MOVEMENT

BY HENRY S. DRINKER,

President of Lehigh University and President of the American Forestry Association.

THOSE who are genuinely and intelligently devoted to the support and spread of the principles of Forestry know that Forestry is not merely a fad or hobby of the Nature lover; it is a highly important and patriotic movement: the Pioneers of Forestry in our country were in reality the Pioneers in the development of the great principles of Conservation that are now engaging the attention of the whole land. It may be well to take account of stock of the strength of the movement today. Forestry has been called the Keystone of Conservation—perhaps an equally apt designation would be to term it the foundation or beginning of the Conservation Movement, and today its principles are being taught in the great schools of Forestry maintained at so many of our leading institutions of higher education. In the Appendix to this address will be found lists of twenty-three schools in the United States with courses leading to a degree in Forestry; ten schools with courses covering one or more years in forestry; and thirty-four schools with short courses in Forestry. Doubtless our fellow member, Prof. Hugh P. Baker, will tell us of the new Forest Experiment Station in the Catskills of the University of Syracuse, and of their State Ranger School which was opened in September last; and here may I refer to two movements in my own State of Pennsylvania. The Pennsylvania State Forest Academy at Mont Alto was founded by the Legislature of Pennsylvania in 1903. As an institution of its kind it has been, I think, unique in the United States. Its special purpose is to prepare foresters for service on the Pennsylvania State Reserves. Young men are selected by rigid competitive examination and then trained for three years in the Academy.

Each student enters into a contract with the State and must furnish a bond for \$500.00 guaranteeing completion of study work and service to the State for three years after graduation. The Faculty of the Institution is composed of a strong body of instructors, young men of vigor and ability, all but one of whom are trained foresters and graduates from schools of recognized standard. The Academy has thus far graduated 52 foresters, 50 of whom are now employed on the State reserves. The general course of instruction in the Academy is equal to that of our undergraduate schools, and a large part of the instruction in forestry is on a par with that of forestry schools of college standard.

So much for the amply good provisions in our country for the professional training of Foresters and Rangers, but there is a further and equally important work that our universities and colleges can do, in the instruction of the public in this great question. It should be made everywhere a part of University Extension work, and I cite with much pride the share borne in recent years by my own Alma Mater, Lehigh University, in instituting and carrying on free public lecture courses every year,—the student body, of course, being admitted. These lectures are given by men eminent in Forestry, thus diffusing a leaven of knowledge of the subject throughout the neighboring community. Eminent Foresters such as, John Birkinbine, President of the Pennsylvania Forestry Association; S. B. Elliott, of the Pennsylvania Forestry Reservation Commission; Dr. J. T. Rothrock, formerly Commissioner of Forestry of Pennsylvania, and a pioneer in the forestry movement; the Hon. I. C. Williams, Deputy Commissioner of Forestry of Pennsylvania; the Hon.

Curtis Guild, Jr., ex-Governor of Massachusetts, and ex-President of the American Forestry Association; Prof. Filibert Roth, of the University of Michigan; George H. Maxwell, Director of the American Forestry Association, and Executive Director of the Flood Commission of Pittsburgh; F. W. Rane, Forester of Massachusetts; Samuel N. Spring, Forester of Connecticut; E. A. Ziegler, Director of the Pennsylvania State Forest Academy; Prof. B. E. Fernow, of the University of Toronto; H. S. Graves, Forester of the United States; E. A. Sterling, Consulting Forester, formerly Forester of the Pennsylvania Railroad; George H. Wirt, Chief Forest Inspector of Pennsylvania; Ellwood Wilson, Forester of the Laurentide Paper Company, Canada, and Prof. Hugh P. Baker, of The New York College of Forestry at Syracuse University, have been lecturing in this course which is supported by an endowment from a good friend of Forestry, given for this special purpose.

Think of the extra-mural educational results that would be accomplished if this plan could be taken up and pursued in all the local spheres of influence of our privately endowed colleges and universities throughout the country—with the added educational campaign through the reports of these lectures in the columns of the local papers. I do not refer to the State endowed and supported universities who we know are doing great work in their educational campaigns among the people of their States. And we all recognize and appreciate the immensely important popular educational work carried on so efficiently and with such wonderful economy by the United States Forest Service.

Forestry and Conservation owe much to the institution in the past of organizations such as this Association, and the growth of these organizations and their multiplication in the various States are an unerring indication of life and increasing strength in the movement.

New England may well be proud of the large number of men and women in that section who are unselfishly devoted to public service and actively interested

in forestry. The Forestry Conference at Bretton Woods in July last was a notable gathering and the papers presented and the discussions held were most valuable and pertinent. This gathering was held under the auspices of the Society for the Protection of New Hampshire Forests, with the co-operation of the New Hampshire Forestry Commission,—the following organizations co-operating: The Association of Northeastern Foresters, the New Hampshire Timberland Owners' Association, and our American Forestry Association. The Association of Eastern Foresters has just held a most successful session at Lakewood, New Jersey, the members being the guests of Mr. Charles Lathrop Pack, the President of the National Conservation Congress. This Association covers nine States north of the Potomac, and east of the Alleghenies. In the far Northwest we have the Western Forestry and Conservation Association embracing some nineteen different efficient Forestry,—Fire Protective,—Timber Protective,—and Fire Patrol Associations,—and covering the great timber States of Oregon, Washington, California, Montana and Idaho, in the promotion of whose work E. T. Allen, Forester of this great Western Forestry and Conservation Association, has rendered such signal and great services not only to the cause of forestry in the Northwest, but by example and precept to the whole country. His "booklet," as he modestly terms it, on "Practical Forestry in the Pacific Northwest," issued by the above Association, and widely and generously distributed, is one of the best epitomes of Practical Forestry that has ever been published.

New York is organizing a New York State Forestry Association at Syracuse—of which we may hear from our fellow-member, Dr. Hugh P. Baker, in charge of the new State College of Forestry at Syracuse University.

And there are many other local organizations formed and forming throughout the country by Nature lovers and patriotic and far-seeing women and men, in the interest of Forestry, for a list of which I am indebted to Mr.

H. S. Graves, U. S. Forester, and to Mr. P. S. Ridsdale, Secretary of our Association, from records in their offices. As a matter of interest I have appended to my address the names and addresses of these associations throughout the country.

The American Forestry Association has fair claim to have led the early movement as "The American Forestry Congress," organized in 1883, later reorganized in 1890 as "The American Forestry Association." The Colorado Forestry Association was also an early pioneer.

One of the very earliest Forestry Associations organized was started in Philadelphia in 1886, the Pennsylvania Forestry Association, which first met at the residence of Mrs. Brinton Coxe, to whom, with Mrs. J. P. Lundy, it primarily owed its existence. Who can measure the untold and immeasurable good its steady, quiet, persistent work and influence have had in the development of Forestry interests in the country at large, and in the adoption of the policy that gave Pennsylvania a State Forestry Department and that has today secured to Pennsylvania the second largest Forest Reserve in any State,—about 1,000,000 acres,—New York only being in advance. The official organ of the Association, *Forest Leaves*, has been published and circulated uninterruptedly since July, 1886. The original organization in 1886 consisted of Dr. J. T. Rothrock, President; Dr. J. P. Lundy, Treasurer, and Mr. John Birkinbine, our fellow-member, Secretary. Mrs. Brinton Coxe was a member of the original council and has remained an active member to this date; John Birkinbine, elected President in 1893, and Dr. J. T. Rothrock, elected General Secretary in that year, have continuously held those positions to the present time.

We of the American Forestry Association may well honor the name of our fellow-member and Vice-President, Dr. J. T. Rothrock, who, in 1877, while Professor of Botany and Lecturer on Forestry in the Michaux course of Forestry Lectures at the University of Pennsylvania, called attention to the importance of the Forestry problem in Pennsylvania

and in the United States; after a study during a leave of absence in 1880, of Forestry conditions in Germany, he became the leading exponent of the Cult in Pennsylvania and is deservedly looked up to as the wise Ulysses of this modern warfare to recover our reft and stolen woodlands, as our revered and honored friend and fellow-member, Mr. S. B. Elliott, is looked up to as the Nestor of the movement in the Keystone State.

When we come to the recent National work, so many great minds, so many men of marked ability have joined with and followed Mr. Pinchot's recognized early leadership, that it is happily impracticable to attempt to give individual credit where so many have co-operated to bring about the increasingly promising conditions of today. It has been well said that the two great enemies of Forestry have been and are, Forest Fires and Unwise Taxation, a sentiment that was early emphasized by Mr. Pinchot. The country has measurably been awakened to the fire danger, and there is no question but that an intelligent appreciation of the taxation evil is growing. A farmer growing grain may annually harvest and sell his crop, and have wherewith to pay his taxes, but the timber grower raises a crop that does not mature for thirty or forty or more years, and the taxes should be adjusted to bear on the yield when it comes, otherwise the owner will cut and sell his timber to avoid taxation. As Chairman of the Committee on Legislation of the Pennsylvania Forestry Association, and as a member of the similar Committee of the Pennsylvania Conservation Association, I communicated last summer with the State authorities of every State in the Union, asking information as to the local system of timber taxation, and as to whether the State had a Forestry Commission, and any provision for State Forestry Reservations, the returns to be used in an application that those associations propose to make this winter to the Legislature of Pennsylvania for the adoption of the system of timber taxation now generally advocated by experts on Economics and Forestry throughout the country,—

that is to say,—a moderate annual tax on the land, and a yield tax on the timber when it is cut based on a percentage of the value of the trees at the time of harvesting. Courteous attention throughout the States was given to this inquiry and we were placed in touch with the officials in charge of Conservation and Forestry wherever such departments exist; and the results of our inquiry on timberland taxation showed a general sentiment in favor of the yield system of taxation, and against any systems of exemption or bonus giving which appear to have been generally found ineffective where tried. The conclusions reached were embodied in a summary of the matter that I was privileged to give before the Pennsylvania State Forest Academy at Mont Alto in August last. I also call your attention to an educational Fire Circular—issued during the past year—jointly by the Pennsylvania Forestry Association, the Pennsylvania Conservation Association, the Philadelphia Commercial Museum, and Lehigh University, modelled on a similar circular issued sometime ago by the Western Forestry and Conservation Association. Fifteen hundred thousand copies of these circulars have been printed and almost the entire edition has been distributed among the children attending the public and parochial schools in the cities and rural districts of Pennsylvania—about one million during the spring and summer, with an additional renewed distribution of five hundred thousand copies this autumn mainly in the rural districts.

In the course of our taxation inquiry, much interesting information came to hand in regard to the present Forestry organizations in the different States, and as it would appear that the members of this National Organization,—the American Forestry Association—should have this information before them in succinct form, I give you the following summary, which you will re-

member has been derived directly and recently from official sources.*

At the present time thirty-four of the forty-eight States of the Union, over two-thirds, are showing active practical interest by State action, in Forestry,—Alabama, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, North Carolina, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

It will be observed that all the New England States are in this list,—perhaps because, as in New York and Pennsylvania, the vital need for action has been brought home by the decreasing timber supply. Should it not be our duty and task to awaken to action the authorities of the States which so far have not taken action, to institute Forestry Commissions and to provide effective fire protection, make adequate appropriations and enact wise timberland taxation laws, and to the advisability of doing this before the lesson is brought home by the increasing scarcity of local timber growth.

The following thirty-four States now have State Forestry Organizations of some kind:

Alabama.—Has a State Commission of Forestry, with laws providing for penalties for setting fire to forests, for fire wardens, and for exemption from taxation on recommendation of the Forestry Commission of lands devoted to timber growth which at the time of application are assessed at not over five dollars per acre. Alabama is fortunate in having for its State Game and Fish Commissioner John H. Wallace, Jr., of Montgomery, who is also Secretary of the Forestry Commission, whose work in the promotion of conservation principles has

*Before the publication of this summary in this paper I have been indebted to Mr. H. S. Graves, U. S. Forester, and to Mr. J. G. Peters, Chief of State Co-operation, U. S. Forest Service, for a careful revision of these returns, and for additional facts added by them and supplied for this paper from the records of the United States Forest Service, including most of the tables in the appendix. Also to Professor H. H. Chapman, Professor of Forestry of the Yale Forest School, for additional data.

been most noteworthy. The membership of the Alabama State Commission of Forestry is made up of the Governor, a member of the State Tax Commission, the State Game and Fish Commissioner, the Commissioner of Agriculture and Industries, a practical lumberman, a member of the United States Forest Service, and the Professor of Forestry in the Alabama Polytechnic Institute.

California.—Has a State Board of Forestry, composed of the Governor, Secretary of State, Attorney General, and State Forester. There are provisions for Fire Wardens, and for prosecution for violation of forest laws. The California State Reports show evidence of supervision in the matter of fire protection and prosecutions for violations of the forestry laws, with a list of over 1,000 State Fire Wardens in 1912. California has, as yet, no special Timberland Taxation Law. Consideration is being given to a proposal to enact legislation, as a step forward, authorizing the issue of deferred tax certificates bearing interest, the timber to be released by the county assessor, for cutting, on the payment of the accrued taxes with interest.

Colorado.—The State Board of Agriculture is ex-officio State Board of Forestry. The position of State Forester has been established, and the last annual appropriation which is available for general forest work, was \$5,000. The State has a fire protective system, which is supported by the counties. The State has adopted a plan of tax exemption by which the increase in value of private lands through the planting of timber trees upon them is not to be taken into account in assessing the lands for taxation, for a period of thirty years after planting.

Connecticut.—Has a State Forester under the supervision of the State Agricultural Experiment Station. The position has been ably filled in recent years by our fellow-member and former Director, S. N. Spring, now Professor in the New York State College of Agriculture at Ithaca, and who has been succeeded as Forester by W. O. Filley, formerly Assistant State Forester. Connecticut has a State Commission (appointed in 1911) "to investigate the subject of

taxation of woodlands," whose report, I am informed, will soon be ready for distribution, and has statutory provisions for exemption of woodlands from taxation under certain conditions; for Fire Wardens and Patrolmen, and for penalties for careless or unlawful starting of woodland fires. The State has four forest reserves aggregating 2,100 acres.

Delaware.—Has a State Board of Forestry, composed of the Governor, Secretary of State, President of the State Board of Agriculture, the Director of the Agricultural Experiment Station, and the Forester of Delaware College. The Forester of Delaware College is ex-officio State Forester. There are provisions for forest wardens and for penalties for causing fires. No special timberland tax system.

Idaho.—Has one of the best forest fire laws in the country. It provides for a co-operative fire protective system between private owners and the State. The owners pay the cost of protection, according to the acreage of the holdings, and the State, as an owner, pays its pro-rata share. The administration of this law under the State Board of Land Commissioners and the annual appropriation by the State for fire protection, is \$15,000.

Illinois.—Each county in the State is, by Statute, authorized to organize a "Forest Preserve District" on petition of the residents and a favorable vote by the voters of the District. Such preserves are managed by a President appointed by the Governor, and four Commissioners appointed by the President of the Board of County Commissioners or the Chairman of the Board of Supervisors of the county in which such forest preserves are situated.

Indiana.—Has a State Board of Forestry.—Five members, one from the Hardwood Lumber Dealers' Association of Indiana; one from the Retail Lumber Dealers' Association of Indiana; one from the Faculty of Purdue University; one who is actively engaged in farming; and one having special knowledge of forest preservation and timber culture, and of the topography of the State;—the last to be also ex-officio State Forester. One reservation (2,000 acres) used as a forest

that is to say,—a moderate annual tax on the land, and a yield tax on the timber when it is cut based on a percentage of the value of the trees at the time of harvesting. Courteous attention throughout the States was given to this inquiry and we were placed in touch with the officials in charge of Conservation and Forestry wherever such departments exist; and the results of our inquiry on timberland taxation showed a general sentiment in favor of the yield system of taxation, and against any systems of exemption or bonus giving which appear to have been generally found ineffective where tried. The conclusions reached were embodied in a summary of the matter that I was privileged to give before the Pennsylvania State Forest Academy at Mont Alto in August last. I also call your attention to an educational Fire Circular—issued during the past year—jointly by the Pennsylvania Forestry Association, the Pennsylvania Conservation Association, the Philadelphia Commercial Museum, and Lehigh University, modelled on a similar circular issued sometime ago by the Western Forestry and Conservation Association. Fifteen hundred thousand copies of these circulars have been printed and almost the entire edition has been distributed among the children attending the public and parochial schools in the cities and rural districts of Pennsylvania—about one million during the spring and summer, with an additional renewed distribution of five hundred thousand copies this autumn mainly in the rural districts.

In the course of our taxation inquiry, much interesting information came to hand in regard to the present Forestry organizations in the different States, and as it would appear that the members of this National Organization,—the American Forestry Association—should have this information before them in succinct form, I give you the following summary, which you will re-

member has been derived directly and recently from official sources.*

At the present time thirty-four of the forty-eight States of the Union, over two-thirds, are showing active practical interest by State action, in Forestry,—Alabama, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, North Carolina, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

It will be observed that all the New England States are in this list,—perhaps because, as in New York and Pennsylvania, the vital need for action has been brought home by the decreasing timber supply. Should it not be our duty and task to awaken to action the authorities of the States which so far have not taken action, to institute Forestry Commissions and to provide effective fire protection, make adequate appropriations and enact wise timberland taxation laws, and to the advisability of doing this before the lesson is brought home by the increasing scarcity of local timber growth.

The following thirty-four States now have State Forestry Organizations of some kind:

Alabama.—Has a State Commission of Forestry, with laws providing for penalties for setting fire to forests, for fire wardens, and for exemption from taxation on recommendation of the Forestry Commission of lands devoted to timber growth which at the time of application are assessed at not over five dollars per acre. Alabama is fortunate in having for its State Game and Fish Commissioner John H. Wallace, Jr., of Montgomery, who is also Secretary of the Forestry Commission, whose work in the promotion of conservation principles has

*Before the publication of this summary in this paper I have been indebted to Mr. H. S. Graves, U. S. Forester, and to Mr. J. G. Peters, Chief of State Co-operation, U. S. Forest Service, for a careful revision of these returns, and for additional facts added by them and supplied for this paper from the records of the United States Forest Service, including most of the tables in the appendix. Also to Professor H. H. Chapman, Professor of Forestry of the Yale Forest School, for additional data.

been most noteworthy. The membership of the Alabama State Commission of Forestry is made up of the Governor, a member of the State Tax Commission, the State Game and Fish Commissioner, the Commissioner of Agriculture and Industries, a practical lumberman, a member of the United States Forest Service, and the Professor of Forestry in the Alabama Polytechnic Institute.

California.—Has a State Board of Forestry, composed of the Governor, Secretary of State, Attorney General, and State Forester. There are provisions for Fire Wardens, and for prosecution for violation of forest laws. The California State Reports show evidence of supervision in the matter of fire protection and prosecutions for violations of the forestry laws, with a list of over 1,000 State Fire Wardens in 1912. California has, as yet, no special Timberland Taxation Law. Consideration is being given to a proposal to enact legislation, as a step forward, authorizing the issue of deferred tax certificates bearing interest, the timber to be released by the county assessor, for cutting, on the payment of the accrued taxes with interest.

Colorado.—The State Board of Agriculture is ex-officio State Board of Forestry. The position of State Forester has been established, and the last annual appropriation which is available for general forest work, was \$5,000. The State has a fire protective system, which is supported by the counties. The State has adopted a plan of tax exemption by which the increase in value of private lands through the planting of timber trees upon them is not to be taken into account in assessing the lands for taxation, for a period of thirty years after planting.

Connecticut.—Has a State Forester under the supervision of the State Agricultural Experiment Station. The position has been ably filled in recent years by our fellow-member and former Director, S. N. Spring, now Professor in the New York State College of Agriculture at Ithaca, and who has been succeeded as Forester by W. O. Filley, formerly Assistant State Forester. Connecticut has a State Commission (appointed in 1911) "to investigate the subject of

taxation of woodlands," whose report, I am informed, will soon be ready for distribution, and has statutory provisions for exemption of woodlands from taxation under certain conditions; for Fire Wardens and Patrolmen, and for penalties for careless or unlawful starting of woodland fires. The State has four forest reserves aggregating 2,100 acres.

Delaware.—Has a State Board of Forestry, composed of the Governor, Secretary of State, President of the State Board of Agriculture, the Director of the Agricultural Experiment Station, and the Forester of Delaware College. The Forester of Delaware College is ex-officio State Forester. There are provisions for forest wardens and for penalties for causing fires. No special timberland tax system.

Idaho.—Has one of the best forest fire laws in the country. It provides for a co-operative fire protective system between private owners and the State. The owners pay the cost of protection, according to the acreage of the holdings, and the State, as an owner, pays its pro-rata share. The administration of this law under the State Board of Land Commissioners and the annual appropriation by the State for fire protection, is \$15,000.

Illinois.—Each county in the State is, by Statute, authorized to organize a "Forest Preserve District" on petition of the residents and a favorable vote by the voters of the District. Such preserves are managed by a President appointed by the Governor, and four Commissioners appointed by the President of the Board of County Commissioners or the Chairman of the Board of Supervisors of the county in which such forest preserves are situated.

Indiana.—Has a State Board of Forestry,—Five members, one from the Hardwood Lumber Dealers' Association of Indiana; one from the Retail Lumber Dealers' Association of Indiana; one from the Faculty of Purdue University; one who is actively engaged in farming; and one having special knowledge of forest preservation and timber culture, and of the topography of the State;—the last to be also ex-officio State Forester. One reservation (2,000 acres) used as a forest

experimental station. No special timber taxation system.

Iowa.—The Secretary of the State Horticultural Society is ex-officio State Forestry Commissioner. Limited tax exemption law for timber to encourage fruit growing and forestry; such lands assessed at \$1.00 per acre; 11,746 acres so listed in 1911. No State reservations.

Kansas.—Has no State Forestry Commission. Has a State Forester who is the only Forestry official in the State and who is by virtue of his office as State Forester also Professor of Forestry in the State Agricultural College. There appears to be so small an acreage of woodland within the State that it receives no special attention. There are no State Forest Reservations. There is a Statutory provision dating from 1905, permitting County Commissioners to offer a bounty for tree planting, but so far no county has offered such a bounty.

Kentucky.—Has a Board of Forestry composed of the Governor, the Commissioner of Agriculture, and the Director of the Experiment Station ex-officio, and also three members appointed by the Governor. This Board has appointed a State Forester. There is an annual appropriation of \$15,000 for forestry purposes, including fire protection and the purchase of forest reserves at not exceeding \$10 per acre. No special timber taxation law.

Louisiana.—By legislation in 1912 a State Conservation Commission of three members was created with power *inter alia* over the forestry resources of the State, and taking the place of the previously existing State Conservation Commission (created in 1908), and of the previously existing Departments of Forestry, and of Mines and Minerals. There is a Department of Forestry with a Forester and Deputy Forester. Louisiana is a Banner State in the matter of recent conservation, being the first State to create a Conservation Commission. It has taken liberal action in the enactment of timber taxation legislation. The owner of lands assessed at not over five dollars per acre who contracts with the Commissioner of Forestry to grow trees thereon for a period of not less than thirty nor over forty

years and not to cut except as so contracted, may have a valuation of \$1.00 per acre fixed for taxation for the period of his contract. There are Statutory provisions for prosecution for wilful or negligent setting fire to forests, and for purchase of lands for forest culture and reserves at not exceeding \$1.00 per acre. Louisiana claims the title of "The Leader of the South in Conservation Legislation" and the claim appears to rest on a good foundation of fact. The State owes much to the Hon. Henry E. Hardtner, Chairman of the Louisiana Conservation Commission and President of the Louisiana Forestry Association, who has been a leader in this movement.

Maine.—Has a Forest Commissioner, who is also Land Commissioner, and has entire charge of the fire protection of the lands in the Maine forestry district. Has Fire Wardens and Patrols. Has an annual fund of \$68,000 from a timberland tax for fire protection. One and one-half mills on assessed valuation of forest lands. Has also a tax exemption law. Stringent provisions as to starting fires. Large body of fire wardens.

Maryland.—Has a State Board of Forestry of seven members, composed of the Governor, Comptroller, the President of Johns Hopkins University, the President of the Maryland State Agricultural College, the State Geologist, one citizen interested in forestry, and one practical lumberman. Also a State Forester. Has also provision for purchase of lands for forest culture and reserves at not exceeding five dollars per acre and a present area of nearly 2,000 acres in reservations. Also has provision for Forest Wardens with power to summon male inhabitants to aid in extinguishing fires with penalty on those so summoned for refusing or neglecting to assist. Stringent provisions as to forest fires. No special system of forest taxation or exemption or of bounties.

Massachusetts.—Has a State Forester. Also provisions for fire wardens and deputies and power to require male persons to aid in extinguishment of fires. Stringent provisions regulating starting of fires,—applicable when

adopted by towns. Appropriation of \$10,000 annually for purchase of land for forest production at not exceeding \$5.00 per acre, with provisions for repurchase within ten years by owners. Approximately 4,000 acres have been planted under the Reforestation Act, to date, but as the ten years have not elapsed the area of the State's reserves cannot be finally stated. A Constitutional amendment has just been adopted permitting classified taxation of forest lands under which the friends of Forestry in Massachusetts are now seeking to promote legislation looking to a just system of forest taxation. Has had limited tax exemption.

Michigan.—Has a State Forester and a Public Domain Commission. There is a tax exemption on limited private reserves of a value over and above \$1.00 per acre. The State has forest reserves amounting to 231,349 acres. Has also a fire protective system.

Minnesota.—Has a State Forestry Board and a State Forester and an excellent State Forest Law. Has no special timber taxation laws and no exemption, but gives bounties, and has a fire protective system. There is a Statute authorizing the purchase of land for forest preserves in any township at not exceeding \$2.50 per acre, but not over one-eighth of the area of the township. The State reserves now amount to about 43,000 acres.

Montana.—Has a State Forester, who is under the supervision of the State Board of Land Commissioners. A fire protective system has been established, and the funds available for its use are about \$5,000 annually.

New Hampshire.—Has a State Forestry Commission of three, and a State Forester. Has no classified timber taxation system, but gives rebates; there exists a custom of low assessments on timber lands. There are provisions for Fire Wardens, and stringent regulations as to kindling fires, with penalties. Four reservations aggregating 6,900 acres. Towns and cities have control of shade and ornamental trees in public ways or grounds. A Constitutional Amendment to permit the legislature to separately classify forest property for taxa-

tion, failed of adoption in 1912, lacking a few hundred votes only of the two-thirds popular vote required for its adoption. The Forestry provision was unfortunately joined with an income tax provision in the submission to the voters.

New Jersey.—Has a Forest Park Reservation Commission and a State Forester. Also a State Fire Warden. No special timber tax. Forestry reserves of about 14,000 acres.

North Carolina has no State Forestry Commission as such. Has a Forester, and a Forestry Division under the State Geological and Economic Survey. No special forest tax laws or exemptions and no forest reservations. Is contemplating a thorough reorganization of system of taxation.

New York.—Has a Conservation Commission, having in its charge Forests, Fish, Game, and Waters. There is a Superintendent and Assistant Superintendent of Forests, and foresters; also Forest Rangers and Fire Wardens; also a Forest Pathologist. Has the largest State reservation in the United States (about 1,600,000 acres); provisions for separating land and trees for purposes of taxation are contained in three forest taxation laws of 1912. Stringent penalties for negligent starting of fires.

Ohio.—No State Forestry Commission. Has a Department of Forestry, under the control of the Ohio Agricultural Experiment Station at Wooster, and a Forester appointed by the station. No forest reservation. No special taxation system or exemption for forests. A Constitutional Amendment was adopted Sept. 3rd, 1912, to go into effect Jan. 1, 1913, permitting the exemption "in whole or in part" from taxation of "areas devoted exclusively to forestry," and to permit the passing of laws "to provide for converting into forest reserves such lands or parts of lands as have been or may be forfeited to the State, and to authorize the acquiring of other lands for that purpose."

Oregon.—Has a State Board of Forestry and State Forester. No special system of taxing or of exempting timber lands. No forest reserves as yet,

but a movement is on foot to consolidate the scattered school sections with the intention of creating a State Forest Reserve. Has a fire protective system.

Pennsylvania.—Has a State Department of Forestry with a Commissioner and a Deputy Commissioner of Forestry. Also has a State Forestry Reservation Commission. Has the second largest State Forest Reserve in the United States (about 1,000,000 acres), with provision for purchase of land at not exceeding \$5 per acre. Has a fire protective system. Has taken the lead in the campaign against the spread of the Chestnut Blight by its generous appropriation of \$275,000 for the work, and the effective measures taken thereunder. Has under consideration the enactment of legislation taxing timber land at a small rate per acre, the timber to be taxed at a percentage on the yield when cut. A recommendation to this effect was embodied in the Governor's message of January 7th, 1913, to the Legislature. Acts passed in 1905, providing for rebates, were set aside by the courts.

Rhode Island has a Commissioner of Forestry. No forestry reservations. Exemption from taxation for 15 years of tracts not exceeding 300 acres planted with certain trees in numbers not less than 500 per acre. Has a fire protective system. Has under consideration timberland taxation system. The Governor recommended a revised timber taxation system in his message of January 7th, 1913.

South Dakota.—Has a Commissioner of School and Public Lands. All forest lands in the State are owned either by the National Government, or by the State, and are thus exempt from taxation. Has two State Forests aggregating 60,000 acres. These forest lands are under the direct supervision of the Department of School and Public Lands with a forest supervisor, who is located upon the land. Appropriation is made for a forest fire fund. The sale and cutting of timber on the State Land is controlled by the Commissioner. Stringent provisions against cutting without the permission of the Commissioner.

Tennessee.—Has a State Department of Game, Fish, and Forestry, and a State Warden of Game, Fish, and Forestry. No special timber taxation system or exemption. No State Forest Reservations. Has statutes against wilful firing of forests or neglect in extinguishing fires lawfully started, with penalty.

Utah.—Has a State Conservation Commission, with a Committee on State Forestry Conservation. No special system of taxation of woodlands. No State reserves.

Vermont.—Has a State Board of Agriculture and Forestry and a State Forester and a law for tax exemption for ten years for plantations. State reservations to date amount to a little over 4,000 acres. The Legislature now has under consideration an act assessing plantations at not to exceed \$3.00 per acre on the land, the timber to be taxed when cut at 10% on the gross stumpage value.

Virginia.—Has taken steps to combat the chestnut bark disease. An annual appropriation of \$5,000 has been made for the purpose, and the work is under the supervision of the Commissioner of Agriculture.

Washington.—Has a State Board of Forest Commissioners with a State Forester and Fire Warden, who is in charge of the fire protective system. The last annual appropriation for fire protection was about \$38,000. The State allows a rebate of a portion of the taxes, assessed on plantations of forest trees throughout a period of thirty years after planting.

West Virginia.—Has a Forest, Game and Fish Warden, who is in charge of an ex-officio fire warden system. There is no State appropriation for forest purposes; all expenditures for fire protection are borne by the counties.

Wisconsin.—Has a State Board of Forestry and a State Forester. The State Board consists of the President of the University of Wisconsin, the Dean of the State Agricultural College, the Director of the State Geological Survey, the Attorney General, and one other person. The State has State Forest Reserves of 400,000 acres. Has fire

protection system. Has two tax exemption laws. There is strong advocacy in the State reports of the principle of a yield tax on timber when cut and a small annual tax on the land.

Now surely this is a very encouraging showing, and it is well thus to take stock of the actual strength of the forestry movement that we all have so much at heart. I have not touched on the work of the National Forestry Bureau, for you have in the admirable and full report for 1912, now out, of Mr. H. S. Graves as the United States Forester, full information of the splendid work being done by the Forest Service. The report shows that on June 30th the National Forest Reserves covered in gross area, in twenty States, 160,591,576 acres,—in addition to which there are 26,748,850 acres in Alaska, and 65,950 in Porto Rico,—a total of 187,406,376 acres. The National Forests are shown to contain an estimated total of 600,000,000,000 feet of merchantable timber, and the report contains wise suggestions as to the advisability of cutting the ripe timber. Nothing is more important than to bring home to our people the principle that true Forestry is not the preservation of timber, but its proper cutting and reproduction. The preservation, in exceptional instances, of bodies of timber for scenic and aesthetic purposes and uses is sometimes confounded with forestry proper, but the two are distinct and serve different ends. Surely the preservation of these reserves as a national asset is a policy we should support for the good of the Nation. They are no longer experi-

mental, but have been for years well and wisely administered, not only for the public good and for inter-state advantage, but to the benefit of the localities in which they are located.

In this annual gathering the members of the American Forestry Association have good reason for encouragement and congratulation on the excellent showing of our finances, our increase in numbers, the success of the Association's publicity work, and of the measures such as the Appalachian Reservation law in which success has been attained, in the prospect in the coming year of extending the good work of this our National Forestry organization in co-operation with the National Conservation Congress by the proposed investigations into such questions as forest taxation, forest education, State legislation, forest protection, and in promoting action throughout the country in the interest of Forestry education and intelligent practice.

STATE FORESTS*

January 1, 1913

State	No. of Forests	Total Acreage
Connecticut -----	4	2,100
Indiana -----	1	2,000
Maryland -----	4	1,950
Massachusetts -----	5	15,000
Michigan -----	53	231,350
Minnesota -----	3	43,000
New Hampshire -----	4	6,900
New Jersey -----	6	13,720
New York -----	2	1,644,088
Pennsylvania -----	50	982,337
South Dakota -----	2	60,000
Vermont -----	7	4,375
Wisconsin -----	1	400,000

LIST OF NATIONAL, STATE, AND LOCAL FORESTRY AND CONSERVATION ORGANIZATIONS IN THE UNITED STATES*

National Forestry Associations

American Forestry Association—Henry S. Drinker, President; P. S. Ridsdale, Secretary, 1410 H. St., N. W., Washington, D. C.

Society of American Foresters—Earl H. Frothingham, Secretary, Forest Service, Washington, D. C.

National Conservation Associations

National Conservation Association—Gifford

Pinchot, President, Colorado Bldg., Washington, D. C.

National Conservation Congress—Charles Lathrop Pack, President, Lakewood, N. J.; Thomas R. Shipp, Secretary, Indianapolis, Ind.

State and Local Forestry Associations

Colorado Forestry Association—W. C. M. Stone, President, Denver, Colo.

Connecticut Forestry Association—P. H. Stadtmuller, Secretary, Elmwood, Conn.

*These tables are compiled from data on file in the office of State Co-operation, Forest Service, received from State Foresters or similar officers. Furnished by courtesy of Mr. H. S. Graves, U. S. Forester.

- Georgia Forestry Association—Alfred Akerman, Secretary, Athens, Ga.
- Indiana Forestry Association—George B. Lockwood, Secretary, Marion, Ind.
- Iowa Park and Forestry Association—Wesley Greene, Secretary, Des Moines, Ia.
- Louisiana Forestry Association—Mrs. A. B. Avery, Secretary, 254 Stoner Ave., Shreveport, La.
- Maine Forestry Association—Edgar E. Ring, Secretary, Augusta, Me.
- Massachusetts Forestry Association—H. A. Reynolds, Secretary, 4 Joy St., Boston, Mass.
- Michigan Forestry Association—H. G. Stevens, Assistant Secretary, 525 Bank Chambers, Detroit, Mich.
- Minnesota State Forest Association—E. G. Cheyney, Secretary, St. Anthony Park, Minn.
- Nebraska Park and Forestry Association—Miss Leila B. Craig, Secretary, York, Neb.
- New Hampshire Society for the Protection of New Hampshire Forests—Allen Hollis, Secretary, Concord, N. H.
- New York State Forestry Association—Just organizing; address Prof. Hugh P. Baker, New York State College of Forestry, Syracuse University, Syracuse, N. Y.
- Northern New York Forestry Association—O. B. Tappan, Director, Potsdam, N. Y.
- Association for the Protection of the Adirondacks—E. H. Hall, Secretary, Tribune Bldg., New York, N. Y.
- North Carolina Forestry Association—J. S. Holmes, Secretary, Chapel Hill, N. C.
- Ohio State Forestry Society—Prof. J. J. Crumley, Secretary, Wooster, O.
- Oregon Forestry Association—A. D. Monteith, Secretary, Portland, Ore.
- Pennsylvania Forestry Association—John Birkinbine, President; F. L. Bitler, Secretary, 1012 Walnut St., Philadelphia, Pa.
- Vermont Forestry Association—A. E. Burt, Secretary, Stowe, Vt.
- West Virginia Forestry Association—Prof. A. L. Dacy, Secretary, Morgantown, W. Va.
- Association of Eastern Foresters (nine States north of the Potomac and east of the Alleghenies)—Alfred Gaskill, Secretary, Trenton, N. J.
- Western Forestry and Conservation Association (embraces State and local Associations of Washington, Idaho, Montana, California, and Oregon. Included also in list of Conservation Associations)—G. M. Cornwall, Secretary; E. T. Allen, Forester, 721 Yeon Bldg., Portland, Ore.

CONSERVATION, TIMBER PROTECTIVE AND ALLIED ASSOCIATIONS

CALIFORNIA

- California Forest Protective Association—T. E. Loynahan, Secretary, 905 Crocker Bldg., San Francisco, Cal.
- Redwood Fire and Protective Association—R. D. Swales, Secretary, Fort Bragg, care Union Lbr. Co., California.
- Stockmen's Protective Association—John J. Callaghan, Secretary, Livermore, Cal.
- Sierra Club—William E. Colby, Secretary, San Francisco, Cal.
- Tri-Counties Reforestation Committee—Miss C. J. Jensen, Secretary, Riverside, Cal.
- Water and Forest Association—I. C. Friedlander, Secretary, 1405 The Merchants' Exchange Bldg., San Francisco, Cal.

IDAHO

- Clearwater Fire Protective Association—Ben E. Bush, Secretary-Treasurer, Orofino, Idaho.
- Coeur d'Alene Timber Protective Association—F. J. Davis, Secretary and Treasurer, Coeur d'Alene, Idaho.
- Pend d'Oreille Timber Protective Association—T. J. Humbird, Secretary-Treasurer, Sandpoint, Idaho.
- Potlatch Timber Protective Association—W. D. Humiston, Secretary, Potlatch, Idaho.
- (The above four organizations comprise the Northern Idaho Forestry Association.)

MAINE

- Kennebec Valley Protective Association—

- Forrest H. Colby, Secretary-Treasurer, Skowhegan, Me.

MICHIGAN

- Michigan Hardwood Manufacturers' Association, Fire Protective Department—J. C. Knox, Secretary; Charles H. Hickok, Chief Fire Warden, Cadillac, Mich.
- Northern Forest Protective Association—Thomas B. Wyman, Secretary-Forester, Munising, Mich.

MONTANA

- Northern Montana Forestry Association—A. E. Boorman, Secretary; G. W. Millett, President, Kalispell, Mont.

NEW HAMPSHIRE

- New Hampshire Timberland Owners' Protective Association—F. H. Billard, Secretary and Treasurer; W. R. Brown, President, Berlin, N. H.

NEW YORK

- Empire State Products Association—Frank L. Moore, President, Watertown, N. Y.
- Forestry, Water Storage and Manufacturing Association of the State of New York—Chester W. Lyman, Secretary, 30 Broad St., New York, N. Y.
- New York State Fish, Game and Forest League—L. C. Andrews, Secretary, Elmira, N. Y.

OREGON

- Clackamas-Marion Counties Fire Patrol Association—C. S. Chapman, Secretary, 719 Yeon Bldg., Portland, Ore.
 Columbia County Fire Patrol Association—H. P. Henry, Secretary, 517 Lumber Exchange, Portland, Ore.
 Coos County Fire Patrol Association—W. J. Conrad, Secretary, Marshfield, Ore.
 Douglas County Fire Patrol Association—Frank E. Alley, Secretary, Roseburg, Ore.
 Jackson County Fire Patrol Association—W. T. Grieve, President and Acting Secretary, Jacksonville, Ore.
 Klamath-Lake Counties Forest Fire Association—J. F. Kimball, Secretary, Klamath Falls, Ore.
 Linn County Fire Patrol Association—Wells Gilbert, Secretary, 405 Concord Bldg., Portland, Ore.
 Oregon Forest Fire Association—C. S. Chapman, Secretary and Manager; A. P. Sprague, President, 719 Yeon Bldg., Portland, Ore.
 Oregon Conservation Association—F. G. Young, Secretary, Eugene, Ore.
 Western Lane County Fire Patrol Association

tion of Oregon—C. S. Chapman, Secretary, 719 Yeon Bldg., Portland, Ore.

PENNSYLVANIA

- Pennsylvania Conservation Association—A. B. Farquhar, President, York, Pa.; George W. Kehr, Secretary, Harrisburg, Pa.
 The Pocono Protective Fire Association—

WASHINGTON

- Washington Conservation Association—Clarence H. Bailey, Secretary, P. O. Box 236, Seattle, Wash.
 Washington Forest Fire Association—M. R. Hunt, Secretary; J. L. Bridge, Chief Fire Warden, 1126 Henry Bldg., Seattle, Wash.

WISCONSIN

- Wisconsin Conservation Commission—E. M. Griffith, Secretary, Madison, Wis.

CANADA

- Canadian Forestry Association—James Lawler, Secretary, Ottawa, Canada. (This paper does not attempt to present, or to deal with, forestry conditions in Canada, but the above address being on hand, is given.)

MOUNTAIN CLIMBING CLUBS

- Appalachian Club, P. E. Lawrence, Secretary, Tremont Bldg., Boston, Mass.
 Alpine Club—Headquarters unknown.
 Rocky Mountain Club—Denver, Colo.
 Mountaineers' Club—Seattle, Wash.
 Mazamas, Portland, Oregon—Leroy E. Anderson, 150 Twenty-fourth St., N. Portland, Ore.
 Sierra Club—San Francisco, Cal.
 Colorado Mountain Club—James S. Rogers, 401-9 McPhee Bldg., Denver, Colo.

GEOGRAPHICAL SOCIETIES

- National Geographic Society—Henry Gannett, President, Washington, D. C.
 Association of American Geographers—Albert Perry Brigham, Secretary, Colgate University, Hamilton, N. Y.
 Geographical Society of Minnesota—Minneapolis, Minn.
 Geographical Society of the Pacific—San Francisco, Cal.
 Geographical Society of California—San Francisco, Cal.
 Geographical Society of Philadelphia—Philadelphia, Pa.
 American Geographical Society—New York City.
 Geographical Society of Chicago—Chicago, Ill.

ANNUAL APPROPRIATION BY THE STATES FOR FOREST WORK*

December 1, 1912.

(Excluding special appropriations for courses in forestry at universities, colleges, and schools.)

- Alabama, \$500—For publications only.
 California, \$15,150—Chiefly for administrative purposes; no appropriation for fire protection.
 Colorado, \$5,000—Administration and publications.
 Connecticut, \$12,000—\$6,500, administration, publications, forest investigations; \$1,500, fire protection; \$2,500, purchase of lands;

- \$1,500, maintenance of State Forests.
 Delaware, \$200—Publications.
 Idaho, \$15,000—Fire protection.
 Indiana, \$6,800—Chiefly for maintenance of the State Forest Reservation.
 Kansas, \$8,400—Administration and planting.
 Kentucky, \$15,000—Administration, fire protection, purchase of forest lands.
 Louisiana (Probably \$25,000; collected from a license tax on the timber-cut of the State)—Fire protection chiefly.
 Maine, \$67,900—Special tax on wild lands for fire protection.
 Maryland, \$42,250—\$10,000, administration

*Compiled by the Office of State Co-operation, Forest Service, U. S. Department of Agriculture. Furnished by courtesy of Mr. H. S. Graves, U. S. Forester.

- and fire protection; \$29,250, purchase of forest lands; \$3,000, publication of reports and maps.
- Massachusetts, \$49,000—\$20,000, administration and publications; \$15,000, fire protection; \$10,000, reforestation fund; \$4,000, nurseries.
- Michigan, \$25,000—\$10,000, fire protection; \$15,000, administration, publications, and the care of State Forest Reserves.
- Minnesota, \$88,400—\$75,000, fire protection; \$13,400, maintenance of Itasca Park.
- Montana—No direct appropriation, but about \$5,000 is available from the several land grant income funds. Salaries and expenses of State Forester's office.
- New Hampshire, \$18,500—\$6,100, administration; \$12,100, fire protection; \$300, forest nursery.
- New Jersey, \$25,500—\$10,500, administration; \$15,000, fire protection.
- New York, \$224,550—\$29,650, administration; \$89,700, fire protection; \$80,200, purchase, maintenance, and survey of land; \$25,000, reforestation.
- North Carolina, about \$3,000—Administration and publications.
- Ohio, \$9,750—Chiefly for reforestation work.
- Oregon, \$30,000—Fire protection.
- Pennsylvania, \$321,750—\$25,000, fire protection; \$25,000, purchase of lands; remainder chiefly for administration and protection of State Forest Reserves and Forest Academy. Also, \$275,000 for chestnut bark disease. (For two years.)
- Rhode Island, \$3,000—\$1,500, administration; \$1,500, fire protection.
- South Dakota, \$3,000—Fire protection.
- Vermont, about \$10,500—General appropriation for forest work, including fire protection, purchase of State lands, reforestation, etc.
- Virginia, \$5,000—Chestnut bark disease.
- Washington, \$37,500—Fire protection.
- Wisconsin, \$95,000—\$35,000, administration and fire protection; \$60,000, purchase of lands. (In addition, from \$50,000 to \$100,000 is received yearly from sale of timber and other products from forest reserve area, which may be expended on various kinds of forest work, including protection from fire.)

SCHOOLS IN THE UNITED STATES WITH COURSES LEADING TO A DEGREE IN FORESTRY*

Biltmore Forest School, Biltmore, N. C.—Course of one full year without vacation leading to the degree of Bachelor of Forestry; with two years of forest work to the degree of Forest Engineer. Traveling school, with spring quarters near Biltmore, N. C.; summer quarters near Cadillac, Mich.; fall quarters near Marshfield, Oregon; winter quarters near Darmstadt, Germany.

Colorado Agricultural College, Fort Collins, Colo.—Four-year course in forestry leading to the degree of Bachelor of Science.

Colorado School of Forestry, Colorado Springs, Colo.—Four-year course leading to the degree of Forest Engineer; two-year course for graduate students leading to the degree of Master of Forestry. Summer term at Manitou Park. Ten weeks ranger course during winter months.

Cornell University, Ithaca, N. Y.—Five-year course in professional forestry leading to the degree of Master of Forestry. Also general instruction in elementary forestry for agricultural students.

Georgia State College of Agriculture, Athens, Ga.—Four-year course leading to the degree of Bachelor of Science in Forest Engineering. A brief course in forestry is also given in connection with the one-year course in agriculture.

Harvard University Forest School, Cambridge, Mass.—Two-year post-graduate course leading to the degree of Master of Forestry. Summer course in Surveying and Logging Railroads, covering eleven weeks, at Squam Lake, N. H. Field instruction centers in the

management of the Harvard Forest, Petersham, Mass., where seven months each year are spent.

University of Idaho, Moscow, Idaho.—Four-year collegiate course in forestry leading to the degree of Bachelor of Science in Forestry. A short course of ten weeks beginning early in January is offered for rangers; a course in general forestry for the students in the various departments of the University; and a short course in farm forestry for students in the College of Agriculture.

Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa.—Four-year undergraduate course in forestry leading to the degree of Bachelor of Science in Forestry. Graduate courses in forestry are offered, but only as minors for graduate work in other branches.

University of Maine, Orono, Maine.—Four-year course in forestry leading to the degree of Bachelor of Science in Forestry.

Michigan Agricultural College, Department of Forestry, East Lansing, Mich.—Four-year course in forestry leading to the degree of Bachelor of Science. With two years' additional graduate work the degree of Master of Science is conferred. A summer term of eight weeks between the sophomore and junior years of the four-year course is held on the 80,000-acre estate of David Ward, Deward, Crawford Co., Mich.

University of Michigan, Forest School, Ann Arbor, Mich.—Five-year course leading to the degree of Master of Science in Forestry. Graduates of other colleges of uni-

*These school tables were kindly furnished for this paper by Mr. H. S. Graves, U. S. Forester, from the records of the U. S. Forestry Department.

versity rank require two years of graduate study.

University of Minnesota, College of Forestry, St. Anthony Park, St. Paul, Minn.—Four-year course in forestry leading to the degree of Bachelor of Science in Forestry. A four-months' course for the juniors is conducted at the Itasca State Park from April 15 to August 15.

University of Missouri, College of Agriculture, Columbia, Missouri—Four-year course in forestry leading to the degree of Bachelor of Science. Summer course of ten weeks on the University forest of 50,000 acres in the Ozark Mountains. A summer school of forestry for lumbermen, timberland owners, and rangers is given in connection with the summer course.

University of Montana, Missoula, Mont.—Four-year course in Forestry leading to the degree of Bachelor of Science. A short course for rangers and others is given during January, February, and March.

University of Nebraska, Lincoln, Nebr.—Four-year course leading to the degree of Bachelor of Science in Forestry. A post-graduate course of one year after the candidate has received his bachelor's degree in forestry, otherwise of two years, leads to the degree of Master of Forestry. In either case, the candidate must have field experience covering one year or an equivalent.

New York State School of Forestry, University of Syracuse, Syracuse, New York.

Ohio State University, Department of Forestry, Columbus, Ohio.—Four-year course leading to the degree of Bachelor of Science in Forestry.

Oregon Agricultural College, Department of Forestry, Corvallis, Oregon—Four-year course in forestry leading to the degree of

Bachelor of Science. A six weeks' winter course is given for those wishing to prepare for position of ranger in Forest Service or for State fire warden.

Pennsylvania State College, Department of Forestry, State College, Pa.—Four-year undergraduate course leading to the degree of Bachelor of Science in Forestry. Eight weeks in summer of sophomore year are spent in camp on a heavily forested tract in northern Pennsylvania, and second semester of senior year in camp in the south or west.

Syracuse University, New York State College of Forestry, Syracuse, N. Y.—Five-year course leading to the degree of Master of Forestry. Also a ranger course of two years dealing particularly with such aspects of forestry as will fit the students for ranger, fire guard, or woods foreman. Instruction is also offered in forestry as related to farming operations and the care of the woodlot, as well as for general students, particularly those desiring to teach.

State College of Washington, Pullman, Wash.—Four-year course leading to the degree of Bachelor of Science in Forestry. Also a six-weeks' short course in the winter school, and a one-year's practical course in the Elementary Science Department.

University of Washington, School of Forestry, Seattle, Wash.—Four-year course leading to the degree of Bachelor of Science in Forestry. Five-year course leading to the degree of Master of Science in Forestry. Short course of twelve weeks for rangers, logging foreman, woodland owners, etc.

Yale University, Forest School, New Haven, Conn.—Two-year post-graduate course leading to the degree of Master of Forestry. Ten weeks' summer field work at Milford, Pike County, Pa., in junior year.

SCHOOLS IN THE UNITED STATES WITH COURSES COVERING ONE OR MORE YEARS IN FORESTRY

Massachusetts Agricultural College, Division of Horticulture, Amherst, Mass.—An elective course in forestry is offered during the junior and senior years, which takes up such studies as silviculture, dendrology, forest economics and law, structure of woods, forest mensuration, and forest management. During the winter several lectures are given by the State Forester on "State Forest Policy." The course is aimed primarily to give the students the same kind of education regarding true forest land as they receive concerning tillable land.

Mississippi Agricultural and Mechanical College, Agricultural College, Miss.—Offers two years of farm forestry and dendrology in connection with the course in agriculture.

New Hampshire College, Durham, N. H.—Courses in forestry are required of all four-year and two-year agricultural students, and are elective for all students of the college. Beginning with the junior year, four-year students in agriculture may elect forestry as a principal subject and are then given advanced forestry work together with other agricultural

and associated subjects. Every encouragement and assistance are given a student desiring to make forestry his profession, with the understanding that he will complete his training at some school offering a complete course in forestry.

Iowa State College, Department of Horticulture and Forestry—Special attention given to farm forestry.

Pennsylvania State Forest Academy, Mont Alto, Pa.—A three-year course in forestry is maintained by the Pennsylvania Department of Forestry for residents of Pennsylvania only. Entrance is by competitive examination. Tuition and board are furnished by the State, in return for which the students give a bond for completion of work and three years' service on State land after graduation.

Purdue University, Lafayette, Ind.—An elective course in forestry is offered during the last three years of the course in general science. The purpose of this instruction is not to train men for technical positions in forestry, but to provide for farmers and owners of forest lands practical and

scientific knowledge which will enable them to administer these with greater economy and efficiency.

Spokane College, Spokane, Wash.—Offers the first two years of a course in forestry, including such subjects as silviculture, history of forestry, forest diseases and insect enemies, forest botany, and forest utilization. A brief course in forestry is also offered during the second year of the two-year course in horticulture.

University of Vermont, Burlington, Vt.—Students in agriculture may elect to specialize in forestry during the last two years of their course. The aim of this course is to train students for Vermont forestry in connection with agriculture, and to prepare them to enter any of the high-grade professional forest schools.

West Virginia University, Morgantown, W. Va.—Courses in forest botany, elements of silviculture, forest economy, forest tech-

nology, forest management, forest mensuration, and surveying, covering one year, are offered as undergraduate subjects in the course leading to the degree of Bachelor of Science in Agriculture. Credit for two of these courses in forestry is given also in the College of Arts and Science.

Wyman's School of Woods, Munising, Mich.—Offers lectures and practice in all branches of forestry, logging, and woodcraft, covering one full year of actual attendance. Upon satisfactorily completing both the theoretical and practical work students are granted a certificate of efficiency in logging engineering. A summer course covering ten weeks is also offered to afford those students who are contemplating forestry as a profession an opportunity to become familiar with the character of the work. It is purely an out-of-door training school, and the entire time is spent in camp.

SCHOOLS WITH SHORT COURSES IN FORESTRY

Alabama Polytechnic Institute, Auburn, Ala.—A course in forestry covering seven weeks is given to senior students in the agricultural course. The work comprises a study of the forest conditions in Alabama, care of woodlands, uses of the different southern woods, methods of preservation, etc.

Antioch College, Yellow Springs, Ohio—No specific work in forestry is given during the college year, but a short course is offered during the summer session.

Berea College, Berea, Ky.—A short course in the fundamental principles of forestry is given as part of the course in agriculture.

University of California—Special forestry preparatory courses.

University of Chicago, Chicago, Ill.—Offers a course in forest ecology. This deals mainly with the life, activities, and death of trees; the structure and role of their various organs; and their relation to climate, soil, and their organic environment. Forest succession and its causes and the great forest formations of the United States and Canada are also taken up.

Clemson Agricultural College, Clemson College, S. C.—Forestry is required in the junior year of the four-year agricultural course and in the second year of the two-year agricultural course. The course is merely incidental to the work in botany.

Connecticut Agricultural College, Storrs, Conn.—An elementary course is offered, designed primarily to familiarize the student with the chief trees of economic importance in the State, and to give approved methods of handling a woodlot with some idea of timber measurement and the general problems of forest management and protection.

Crookston School of Agriculture, Crookston, Minn.—Affiliated with the State University. Teaches farm forestry.

Delaware College, Newark, Del.—A course in elementary forestry is required of all

students in the Department of Agriculture during the second half of their junior year.

Eric Forest School, Duxbury, Mass.—Gives elementary course in forestry. Prepares for higher forest schools.

Hampton Normal and Agricultural Institute, Hampton, Va.—Offers an elementary course in the general principles of forestry during the second year of the three-year course in agriculture.

Hobart College, Geneva, N. Y.—A short course in elementary forestry is offered in connection with the Department of Biology.

University of Illinois, Urbana, Ill.—One semester of work in forestry is given as a general undergraduate elective. The subject may be taken toward the Degree of Bachelor of Arts as well as toward the degree of Bachelor of Science in Horticulture.

Kansas State Agricultural College, Manhattan, Kans.—Two courses in farm forestry are offered during the winter term of junior year. These are required of all students in agricultural courses and are elective to general science students. A course in silviculture during junior year is required of all students in horticulture and is elective to others.

Marathon County School of Agriculture and Domestic Economy, Wausau, Wis.—Two courses in elementary forestry are offered during the second year of the two-year course in agriculture in the plant husbandry group.

Maryland Agricultural College, College Park, Md.—Five lectures in general forestry are given in the weekly lecture course in agriculture. Farm forestry is taught in the second year of the two-year agricultural course.

Middlebury College, Middlebury, Vt.—A course treating especially of the management of woodlots and forests in New England is given three periods a week for half a year.

University of Minnesota, School of Agriculture and N. W. Experiment Station, Crookston, Minn.—An elementary course in forestry is offered to both boys and girls for three months during the first term of senior year.

Mount Hermon Boys' School, Mt. Hermon, Mass.—An elementary course in the care of lawns, shrubbery, and forests is given during one term.

Murray State School of Agriculture, Tishomingo, Okla.—An elementary course in forestry lasting three months is given to second-year students in agriculture.

University of Nevada, Reno, Nev.—Two courses in general forestry are elective during the first and second semesters of junior year in the College of Agriculture.

North Dakota Agriculture College, Agricultural College, N. D.—An elementary course in forestry covering six weeks is offered in the third term of junior year in the four-year agricultural course.

North Dakota School of Forestry, Bottineau, N. D.—An elementary course in forestry adapted primarily to the needs of North Dakota is required during the spring term in the fourth year. The school offers such instruction as is given in an agricultural high school, laying special stress on the encouragement of horticulture and forest culture.

Oklahoma Agricultural and Mechanical College, Stillwater, Okla.—An elementary course in forestry is offered as an elective during the winter term of senior year in the general science, agricultural, and science and literature courses.

Rhode Island State College, Kingston, R. I.—A course in forestry dealing with the management of New England woodlots is required in the second term, junior year, in the agricultural course.

Sharon Summer School of Forestry and Horticulture, Sharon, Vt.—A ten days' course in forestry and horticulture is given during August on the Downer State Forest, Sharon, Vt., under the direction of the State Forester in co-operation with the University of Vermont and State Agricultural College. The course is planned primarily for forest owners,

but also aims to assist students who are contemplating the study of forestry to learn more about the subject before making their final decision.

Smith's Agricultural School, Northampton, Mass.—Forestry work on farm for demonstration purposes. Primarily for boys who intend to operate their own farms.

South Dakota State College of Agriculture and Mechanic Arts, Brookings, S. D.—A course in forestry is required in the second semester of the sophomore year in the horticulture group and in the third year of the three-year school of agriculture. It is elective in the second semester, junior year, in the animal husbandry and dairy husbandry groups of the four-year collegiate agricultural course.

University of Tennessee, Knoxville, Tenn.—Forestry is one of the subjects in the senior year of the four-year agricultural course.

Agricultural and Mechanical College of Texas, College Station, Texas—Elementary forestry is one of the under-graduate subjects in the senior year of the horticultural group of the four-year agricultural course.

Tufts' College, Massachusetts—Special forestry preparatory courses.

Agricultural College of Utah, Logan, Utah.—Offers a three months' winter course for forest rangers. In some of the regular courses in agriculture special attention is given to grazing, and other problems relating to the maintenance of forests and ranges in the western mountains.

Winona College of Agriculture, Winona Lake, Ind.—A course in farm forestry is offered during the fall term of senior year in the Department of Horticulture and Forestry.

University of Wisconsin, Madison, Wis.—Students of engineering are offered favorable opportunities for carrying on advanced study and research pertaining to the utilization of forest products at the Forest Products Laboratory of the U. S. Forest Service. A series of lectures dealing with the various subjects comprised in the utilization of forest products is given at the University each year by members of the Laboratory staff.

*An address delivered at the annual meeting of the American Forestry Association at Washington, D. C., January 8, 1913.

On page 190 is a comprehensive table indicating the class of state legislation relating to forest fires in each state.

DEMAND FOR CIRCASSIAN WALNUT.

According to a circular just issued by the Forest Service, the demand for Circassian walnut has resulted in the substitution of other woods. Our own red gum is often sold as Circassian walnut, and butternut is also similar in general appearance to the less highly figured grades. Many good African, Asian, and South American woods resemble Circassian walnut, though none possesses the magnificent figure, delicate tones, and velvety texture of the latter. The circular discusses the supply and uses of Circassian walnut, and those who wish to know how possible substitutes may be distinguished can learn from this circular the distinctive marks which the Government's experts have discovered.

STATE LEGISLATION RELATING TO FOREST FIRES

Including the Legislative Sessions of the Year 1912*

(x indicates legislation**).

	State	Forest Fire Protective System	Fire Fighting		Burning Brush, Grass, etc., for Agricultural or Pasturage Purposes			Protective Measures Concerning Clearing Rights of Way, Patrol Spark-Arresters, Slash Disposal, etc., Applying to Railroads, Lumbermen, and Others	Specific Appropriation for Fire Protection	
			Citizens May Be Called Upon to Aid	Penalty for Refusing to Aid	Closed Season for Burning	Permis- sion Required	Notice to Neighbors Before Burning			
1	Alabama	x	x		x		x	x		1
2	Arizona									2
3	Arkansas						x			3
4	California	x	x	x	x	x		x		4
5	Colorado	x	x	x				x		5
6	Connecticut	x	x	x	x	x			x	6
7	Delaware	x†			x		x	x		7
8	Florida				x		x			8
9	Georgia				x		x			9
10	Idaho	x	x		x	x		x	x	10
11	Illinois				x		x			11
12	Indiana		x							12
13	Iowa				x					13
14	Kansas				x					14
15	Kentucky									15
16	Louisiana	x			x			x	x	16
17	Maine	x	x	x	x			x	x	17
18	Maryland	x	x	x				x	x	18
19	Massachusetts	x	x	x	x	x		x	x	19
20	Michigan	x	x	x	x	x	x	x	x	20
21	Minnesota	x	x	x	x	x	x	x	x	21
22	Mississippi									22
23	Missouri							x		23
24	Montana	x	x	x				x	x	24
25	Nebraska				x		x			25
26	Nevada						x			26
27	New Hampshire	x	x	x	x	x		x	x	27
28	New Jersey	x	x	x	x	x		x	x	28
29	New Mexico							x		29
30	New York	x	x	x	x†	x†		x	x	30
31	North Carolina						x			31
32	North Dakota		x		x		x	x		32
33	Ohio		x	x				x		33
34	Oklahoma						x			34
35	Oregon				x	x		x	x	35
36	Pennsylvania	x	x	x	x	x		x	x	36
37	Rhode Island	x	x	x	x	x			x	37
38	South Carolina		x	x						38
39	South Dakota				x		x		x	39
40	Tennessee	x	x	x			x	x		40
41	Texas									41
42	Utah									42
43	Vermont	x	x	x	x				x	43
44	Virginia									44
45	Washington	x	x	x	x	x		x	x	45
46	West Virginia	x	x	x				x		46
47	Wisconsin	x	x	x	x	x		x	x	47
48	Wyoming							x		48

*Prepared by the Office of State Co-operation, U. S. Forest Service.

**This table shows merely in what States there is any legislation whatever along the lines indicated, irrespective of the relative value of the legislation in the several States.

†Not organized.

‡In the Adirondack and Catskill fire districts.

All the States have provided for criminal liability for causing fires, and practically all for civil liability.

STATE VS. PRIVATELY OWNED NURSERIES

Following is the Report of a Special Committee of the American Forestry Association upon the Subject of "State Owned vs. Privately Owned Nurseries."

FROM the investigations of this Committee under the resolution adopted at the last meeting, authorizing its appointment, for considering "the advantages of State Nurseries for the propagation, cultivation and sale of Forestry material in competition with the business of private owners," it is our conviction that the matter of producing and distributing Forestry material is one of such importance to the people of the country, that the subject should be handled as a matter of mutual interest, on the part of the United States Forestry Department, the different States, this Association, and those owning private nurseries and engaged in the business rather than as a subject which might cause antagonism between the States and private nurseries.

The Committee wishes to emphasize the fact that the suggestion for investigating the subject arose more from a desire on the part of nurserymen to have the subject investigated than on the part of the Association.

From various data obtained by the Committee from the leading Foresters and representative firms engaged in the business, the following summary of opinions is here presented: The opinion of State Foresters who are conducting State Nurseries, all other State Foresters and all Foresters in other employment, is with two exceptions, unanimous, that State Nurseries should be permitted to sell stock to private parties,—mainly for the following reasons:

(a) Previous to the establishment of State Nurseries private Nurseries had not furnished stock at prices which would permit the planting of large quantities of trees for forestry purposes.

(b) As a result, there was comparatively small demand for nursery

stock for forest planting until certain States instituted the policy of supplying such stock to private planters.

(c) The demand for nursery stock for forest planting is largely the result of this policy on the part of the States, and the claim is made that private nurseries have in the aggregate been benefited rather than injured by it.

(d) The State is justified in encouraging Forestry planting by assisting private owners to obtain cheap nursery stock, in order to secure to the community the benefits of Forestry.

Private nurserymen contend and are generally of the opinion that:

1. State Nurseries which sell to private parties act to deprive privately owned nurseries of their legitimate business, causing them financial loss, and should be prohibited from competing with them.

2. They also contend that it is not the proper function of a State to engage in this industrial enterprise more than in the manufacture and sale of any commercial product in which large amounts of private capital are already invested.

Between these opposing opinions decision should rest upon ascertainable facts bearing on the cost of producing and distributing nursery stock of the desired quality and quantity, and the prices asked for this stock by States and private nurseries respectively, upon the demand for stock for this specific purpose and the supply of nursery stock available from States and from private nurseries.

The Committee is advised by the U. S. Forest Service that ten States reported maintaining forest nurseries, the aggregate acreage of which is 140.5 acres. Connecticut, Kansas, Massachu-

setts, Michigan, New Hampshire, New York, Ohio, Pennsylvania, Vermont and Wisconsin. There were produced during the past year 19,058,000 plants, including both seedlings and transplants. The cost of raising this stock varied for seedlings from 45 cents to \$5.00 per thousand plants, with an average of \$2.50 per thousand; and for transplants, from \$2.00 to \$6.00 per thousand, with an average of \$4.50. This covered all species, both hardwoods and softwoods. The hardwoods were in all cases seedling stock and very much in the minority. The number of plants distributed by these States amounted to 14,100,100, for which a price varying from \$1.00 to \$7.00 per 1,000 was charged, the average being \$4.00 for both seedlings and transplants as well as hardwoods and softwoods. The apparent discrepancy between the figures of production and distribution is accounted for by the fact that several of the States are themselves large users of the planting stock which they raise. There are a few States, on the other hand, that distribute considerably more stock than they produce, the additional amount, of course, being stock purchased from commercial dealers. Only two States report direct importation, the total of which amounts to less than 250,000 plants.

The Committee has been unable to ascertain as to the cost of producing and distributing forestry material by privately owned nurseries.

The cost of raising Forestry Nursery stock includes the following items:

- (a) Initial cost for plant, as land, buildings, equipment, waterworks. The legitimate charge for the item of interest on investment, and depreciation of equipment.
- (b) Skilled supervision and overhead charges.
- (c) Labor cost.
- (d) Selling costs, including advertising.
- (e) Legitimate profits.

These cost items vary according to the following conditions:

- (a) Size of output. Overhead charges are greatly reduced with large annual output.
- (b) Character of labor.
- (c) Soil and climate.
- (d) Assurance of definite and stable markets.

The variation in cost of production from these causes may be as great as 100 per cent.

State Nurseries, in computing costs, are apt to neglect certain elements, especially depreciation, interest, supervision, and, necessarily, profits, and, on a basis of equal efficiency, would tend to undersell private nurseries.

The demand for nursery stock for forest planting arises:

(a) From large corporations doing extensive planting. These concerns have largely pursued the policy of raising their own stock and are therefore seldom in the market.

(b) Small owners planting a few thousand trees per year. This demand is uncertain, constantly shifting, since the same persons do not continue as purchasers from year to year, and is largely influenced by the educational propaganda conducted by State Foresters. In itself, it forms an unreliable basis for conducting a commercial business.

It is apparently true that State Nurseries have it in their power, by developing and increasing in size and output, to supply a very large proportion of the nursery stock required for private forest plantations, and at prices which will make it impossible for private firms to compete successfully with them in this field, in the absence of an assured market for their own output.

In European countries, private nurseries have been able to produce stock more cheaply than States can grow it, and States therefore purchase their stock in considerable quantities from private nurseries, and are their main customers. Demand is steady and permanent.

In conclusion, the Committee presents the following conclusions and suggestions:

(a) States are at present justified in raising their own nursery stock for reforesting State lands.

(b) Sales of Nursery Stock at low prices by State Nurseries to private parties naturally tend to encourage forest planting by individuals.

(c) Low prices for nursery stock sold by States will have the effect of lowering the prices of stock sold by private nurseries for forest planting, but only under the conditions that State output does not monopolize the demand. Should the State output keep pace with the demand, private nurseries will be forced out of this field of endeavor.

(d) The value of State nurseries as regulators of prices for forest stock is recognized, but the policy for the future should probably be for State Nurseries to continue as regulators, along the lines indicated, rather than to assume permanent responsibility for the business.

(e) Present prices on two-year seedling stock sold by private nurseries, in most instances compare favorably with State prices, while prices for three-year transplants are, except in one or two instances, much higher than the State prices.

In view of the facts above stated, the Committee recommends a policy of State purchase of such stock as may be procured to advantage from private nurseries and sale, or subsequent sale, to private parties, for planting purposes.

In the long run, it will probably be better for both States and private land-owners if States endeavor to encourage the legitimate development of private nurseries in the field of supplying trees for forest planting, while retaining the right and ability to check extortionate prices, by supplying stock from State nurseries at low cost. This policy would mean careful consideration of the elements of cost in raising stock, and of the demand and size of output required to supplement and regulate the trade, in order that the States may act with fairness to the public on the one hand and the nursery companies on the other.

The Committee doubt the advisability of free distribution of material for forest planting by States, and consider that better results may obtain if proper prices are charged for the material.

Your Committee desires to express its appreciation of the courtesy extended by State Commissioners, Foresters and the owners of private nurseries for the data and information kindly submitted to it, and hope that the consideration of this subject by the Association may result in harmonious relations between the Forestry Departments of the Government, each of the States and those engaged in the business, to the mutual advantage of all.

(Signed) F. W. KELSEY,

HERMAN H. CHAPMAN,

H. R. BRISTOL,

Committee.

AN APPRECIATION

THE following resolutions were passed at the recent meeting of the North Carolina Forestry Association.

Resolved, That the North Carolina Forestry Association in annual session do hereby endorse the American Forestry Association and the work which it is doing, and ask our members to give it their encouragement and support; and be it further

Resolved, That, as this is the only national association devoted exclusively to forest conservation, we, being heartily in accord with its aims and purposes, do hereby accept the invitation to become affiliated with the American Forestry Association, and do hereby authorize and instruct the Secretary-Treasurer of this Association to take the necessary steps to carry this resolution into effect.

EDITORIAL

WOMEN VIGOROUSLY OPPOSE STATE CONTROL OF THE NATIONAL FORESTS.

THE women of many States are actively protesting to their Congressional delegations that the proposed endeavor to turn over to the States the control and management of the National Forests within their borders would, if successful, be a National calamity. It is good to see that the women are interested. Once aroused they exert a power which demands attention. The Senators and Congressmen from their States must listen to and must respect their communications. If the women of each State in the Union will combine in a joint attack upon the interests which are advocating this State's right question the defeat of the effort to strip the Department of Agriculture of its power over the national forests is certain.

One of the means taken by conservation committee members of women's clubs in California is the sending out of letters like the following to clubs throughout the State.

"You will see by the enclosed leaflet that the forestry committee is asking for your assistance, and we hope you will act promptly for the time for action is at hand.

"You will see by the leaflet 'The National Forests Threatened,' the dire disaster which threatens our vast public domains—our National Forests. A

strong effort is about to be made to break down the present system of protecting the forests, by turning them over to the individual States, if that effort should succeed, the whole progress made by the United States would be lost, and the National Forests would be frittered away. Let us unite and with all our strength work for the cause of conservation and prevent this great wrong.

"Please write to your Senators and Congressmen.

"Please get others to do the same.

"Please secure resolutions from Boards of Trade—Chambers of Commerce—Women's Clubs—and any other organizations.

"Please send me your name, also names of Senators and Congressmen to whom you write; also copies of resolutions that may be passed with title of organization forwarding them to Washington. The leaflet relating to the State Forestry appropriation is of great importance to the welfare of the State. The California Federation stands behind this movement and asks all club women to work for this increased appropriation. Appeal to your Senators and Assemblymen; enlist their goodwill and co-operation; put all your enthusiasm into the Cause."

THE POLICY OF SELLING NATIONAL TIMBER.

THE Forest Service has recently been criticized to some extent about its policy of selling timber on the national forests, the charge being made that a large quantity of ripe timber is not cut, but stands and decays. Like many other attacks upon the policy of the Forest Service this is made without a proper understanding of the conditions and evidently without an inquiry as to the facts of the matter.

Chief Forester Graves in answering

this attack says: "The Forest Service is selling timber as fast as this can be done without sacrificing the interests of the public. It is making every effort consistent with sound business to dispose of the overripe stumpage on the forests and bring the annual cut up to a fair portion of the yield. It is advertising commercial opportunities on the forests widely and successfully. Its sale contracts are framed to meet practical business and logging conditions.

They are accepted by business men and are attracting large investments. The small manufacturer is sought wherever he is equipped to utilize the timber. But where the capital and organization of the big operator are needed to develop inaccessible areas, large sales are made. Yet in all contracts, holding timber for speculation is prohibited and the payment of the proper value is assured by frequent adjustments of price.

"This policy is succeeding. The use of National Forest timber on a sound

and stable basis is increasing rapidly. Within twelve months over one and a half billion feet has been sold. Many operators are looking to the forests for new locations. If the demand is sustained, the yearly sales will soon reach three billion feet. The annual growth on a number of forests which are within reach of markets is now fully used. As transportation facilities are extended, this will be brought about on every forest."

ENCOURAGING FORESTRATION OF PENNSYLVANIA LANDS.

IN THE effort to effect a reduction in the taxation of timber lands and lands suitable for growing timber, and also to provide for State assistance and management as well as proper fire protection, all in order that lands unsuited for farming may be used for growing trees, three companion bills, known as the Auxiliary Forest Reserve Bills, which have been introduced in the last three Assemblies in Pennsylvania, will be again presented in the coming Legislature. The bills are drawn in accordance with the best ideas on forest taxation. They make it entirely optional with the individual owner as to whether or not he takes advantage of the acts. One bill provides that all forest land which will be managed in accordance with directions of the Department of Forestry, be classed as auxiliary forest reserve land, and as such be taxed on an assessment of one dollar per acre for the land. The trees are taxed only when cut ten per cent of the value of the timber being taken. The third bill provides that any deficiency in county and township funds due to the decrease in taxes otherwise available from forest lands be made good by the State.

With fire protection, taxes placed at a minimum, and assistance in management free of cost, private individuals can practice forestry on small holdings and do it profitably notwithstanding the long time required to grow merchantable trees.

Forest trees may be grown on land

that is too poor for profitable agriculture. Besides furnishing a necessary and valuable crop of wood they exert upon their surroundings certain beneficial effects, climatic and economic, which are of value to the community as well as to the owner of the land and the trees. It is safe to state that approximately 15,000,000 acres in Pennsylvania are better suited for forest crops than for farm crops, but at present the forest area can hardly exceed 7,000,000 acres.

There are several apparent reasons for this condition of affairs. The first is improvident farming; the second, forest fires, and the third, unwise forest taxation. There are other reasons, but these are the most important.

Improvident farming has robbed many fields of their fertility, allowed the soil to become sour, or rich hill-sides to be eroded. Then, too, much land was cleared for farming that ought never to have been denuded of trees. Forest fires have preceded and followed lumbering and made desolate thousands of acres that would have produced magnificent forests had fires been prevented. The effect of the frequent burnings is to destroy even the possibility of reforestation for years to come.

Unwise taxation has caused many a man to cut and market his trees because it was equivalent to a confiscation of his property if he held the trees for any length of time.

There are certain things that the State Government can and ought to do

to remedy such conditions. The first, of course, is education. The people must be told of these conditions and of the value of forests. An effective system of protection from forest fires must be put in force. The State is the largest loser as a result of its negligence in this matter. The State may purchase and manage for itself a considerable body of land for forest production, but there must be some steps taken to make it profitable for individuals to care for their existing forests and to reforest their waste land. With the fires stop-

ped one of the greatest handicaps is removed. Next to this there must be a change in the taxing methods. It is true that primeval timber may be taxed as stored up wealth, but growing forests can not and ought not to have a heavy tax upon them. Again, it is true that individuals are not likely to take to planting and caring for forests because as a business it requires a long time and large investments; but with the assistance of State officials the management of small tracts is possible and cooperative activities more likely.

MUNICIPAL WATER SUPPLY RESERVES.

THE bill reserving National Forest land on the side of Pike's Peak, for the protection of the watershed used by the City of Colorado Springs and the town of Manitou, which has been passed by the House and Senate and signed by the President within the last few days, is a very good conservation measure.

The land is reserved from all form of entry or other appropriation, and set aside as a municipal water supply reserve. It will be administered by the Secretary of Agriculture at the expense and in co-operation with the two municipalities. This action on the part of Congress apparently settles the question which has been before it for the last three years, as to whether or not municipalities are entitled to grants of whole watersheds of National Forest land just because the city's water supply is obtained from streams draining the watersheds.

In strong contrast to this measure is the law passed while Secretary Ballinger was a member of the Cabinet. That law granted to his home town, the City of Seattle, the right to obtain title to 85,000 acres of Government land in the

Snoqualmie National Forest. Citing the Seattle law as a precedent, the United States Senate passed a bill during the past session to grant to the City of Everett, Washington, 110,000 acres of heavily timbered land in the same National Forest. This method of making absolute grants to municipalities for watershed protection and for public park purposes was obviously intended by those advocating State or other local control to be an initial step toward cutting into the National Forests with these grants to such an extent that the remaining areas could not be economically administered by the Federal Government.

Since the National Forests are established and maintained for the purpose of improving and protecting forest growth within the boundaries and securing favorable conditions of water-flow, and it has always been the practice of the Forest Service to assist and co-operate with various municipalities in improving and protecting their water supply, it is not at all necessary that the cities should acquire ownership of the watershed in order to protect water needed for municipal purposes.

BASKET WILLOW CUTTINGS.

The Department of Agriculture is getting ready to fill requests for the basket willow cuttings grown last year on its experimental farm at Arlington, Va. Distribution of these cuttings takes place early in March each spring, to farmers and others who wish to make trials of basket willow on lands too wet for other crops. From 50 to 100 cuttings are given to each person.

PREPARING FOR TIMBER SALES

THE operation of the Forest Service's excellent system of making timber sales on the national forests where it is possible to do so in accordance with the well-defined policy of the service, recently so unjustly criticized, was exemplified at a meeting in Spokane of forest officials of Washington, Idaho and Montana a few days ago. At this meeting arrangements were made for the sale of six billion feet of lumber, mostly white pine, from the national forests near Spokane.

A crew of ten men will start at once the task of estimating in the Clearwater Forest of Idaho, in which a billion and a half feet of lumber have been applied for. On account of the stupendous proportions of the sale, the estimating cannot be completed before autumn.

Another crew of estimators will go to the Pend Oreille Forest, also in Idaho, before the middle of March. As rapidly as the work of surveying and planning of operations can be concluded the timber will be thrown open to bids.

Two hundred million feet of lumber will be sold from the Kaniksu National Forest April 1st, but this is insignificant compared to some sales that will be made in the Clearwater, Pend Oreille, Coeur d'Alene and Kootenai forests of Idaho, and the Flathead, Blackfoot and Lolo forests in western Montana.

In a discussion of the relation of established industries, particularly sawmills, to national forest timber sales, it was the consensus of opinion that there is sufficient timber in the forests to justify additional sawmills and that it should be the policy to put up for sale a sufficient amount to justify their installation. In the case of a community

where there is apparently already a sufficient number of mills established to handle properly all timber which would probably be for sale, it would be the policy of the service to discourage the establishment of new mills and to award sales of timber to those companies which already have mills established.

Plans for carrying on an extensive estimating work this coming season were outlined and thoroughly discussed. Next year's plans call for the maintenance of five distinct crews of 10 men each, devoted entirely to estimating timber which has been applied for. It is expected that these crews will cover between 800,000 and 1,000,000 acres at a cost not to exceed 6 cents an acre.

After discussing the question of whether the service would be justified in selling timber on agricultural land without requiring the usual stipulation that the timber be removed within a reasonable time, it was determined that the present policy of selling only on condition that the rule be adhered to should be followed. It was shown that the service is receiving what is believed to be the full market value of the timber, and therefore the seemingly low price is justified, in order to assist in opening up agricultural land.

District Forester F. A. Silcox, of Missoula, Mont., who presided over the session, announced that plans for fire prevention in the forests would be prosecuted more vigorously than ever. A system of trails, to consist of main trails, joined by connecting and spur trails, has been mapped out. Brush and undergrowth will be cleared out before summer, and the telephone systems now in use in the forests will be improved and extended.

YOSEMITE PARK IMPROVEMENTS PREVENTED.

Despite the fact that the Senate had passed the bill permitting improvements in the hotel service in the Yosemite National Park, the House on February 17 struck the bill from the calendar. The bill provided that a hotel company be given a twenty-year lease upon consideration of making substantial improvements and additions. The California delegation made a strenuous fight to have the bill passed.

PURCHASE OF APPALACHIAN FOREST LAND

HAND is to be purchased under the Week's forestry law in several new areas, according to a recent announcement of the Forest Service. The Government now actually has title to 57,789 acres and 300,000 more is being transferred. Late payments for land included \$200,000 for tracts in the Nantohola area and Mt. Mitchell areas, North Carolina. Eight forests are now under administration.

W. L. Hall, of the Forest Service, who has charge of work under the Week's law, has just returned from a land inspection trip in New Hampshire and the Forest Reservation Commission is expected to meet soon and recommend the purchase of additional land.

The newly designated purchase areas are mostly in the South.

THE EASTERNER

By JACK WELCH.

I was a ranger on the Bow*
In the Service's early days,
With a scalin' stick, and an army Colt,
And a nerve you couldn't feaze.
A veteran of the cattlear
And the Leadville riot row,
With a keen contempt for the Easterner,
The pin-head, town-bred Easterner
Who called a steer a "ceow."

I knew the kinks of a ranger's job
From A to the letter Z,—
Fire patrol in the Snowy Range
To side camp cookery.
Slingin' my tarp when the sun went down,
In the Rockies' fenceless campin' ground;
None of the Eastern college kids
Could show a thing to me.

His tables of yield and growth per cent
Would make a cayuse smile.
To see him throwin' the diamond hitch
Would pay you to hike a mile.
He came with a thin-skinned silken tent,
His grammar was certainly excellent;
But grammar don't count for a copper cent
When savvy and sand's at trial.

So first we tormented him, then ignored.
I guess his life was Hell.

The pace we led the assistant man
Wouldn't be good to tell.
But as the years are speedin' on
And the seasons come and go,
We're comin' to see that the Easterner,
The quick-brained, school-trained Easterner,
Is a pretty good man to know.

We've camped, and smoked, and rode, and
joked,
And run out lines together
When the misty mountains loomed up cold
In the Bow's October weather.
We fought the fires of Nineteen-ten,
(Fought, and ran, and fought again,
Sectional lines were forgotten then),
That made us pards forever.

Now we feel he's one of us
And forget his Eastern birth.
We find he knows some things we don't
About this planet Earth.
So we listen while he tells us,
And he listens in return;
For each can teach the other
Some useful things to learn.

*The Medicine Bow National Forest, then the Cheyenne.

TO LEAVE ONE TREE IN TEN

THE proposed act, recently introduced in the North Carolina State Legislature, providing that all lumbermen working in clearing timberlands in that State shall leave one tree in every ten standing, has been endorsed by the Asheville Board of Aldermen, the Board of Trade and the Merchants Association of Asheville.

Members of these bodies will write letters to the State's Senators and Representatives asking them to support the bill and urge its passage. If the bill fails to pass and become a State measure, the Representatives from Buncombe County, in which Asheville is situated, will be asked to introduce a similar bill to apply to that county alone.

STATE NEWS

Kentucky

On January 18, the State Board of Forestry consisting of Governor James B. McCreary, Commissioner of Agriculture John W. Newman, and Dr. Jos. H. Kastle, Director of the Kentucky Experiment Station (ex-officio members of the Board), and Mr. Johnson N. Camden, of Versailles, Mrs. Mason Maury, of Louisville, and Judge Wm. H. Mackoy, of Covington, met at its regular quarterly meeting. State Forester J. E. Barton, the Secretary of the Board, brought before the meeting many important lines of activity which were planned for the coming year. A resolution was adopted, urging the members of the Kentucky Congressional delegation to do all in their power to secure a continuance of the \$200,000 appropriation under the Weeks Law for Federal co-operation with the States. The Board decided to acquire several sites for nurseries in various sections of the State where stock can be raised for the citizens of the Commonwealth and sold to them at cost. One of the sites which will be utilized is a tract of 25 acres at Louisville, which is a part of the State Fair grounds. It is expected to develop on this land a small nursery and model forest so that visitors to the State Fair may have an ocular demonstration of the best methods and means of reforestation. This nursery and plantation will be adjacent to a new fish hatchery to be established by the U. S. Bureau of Fisheries, and will undoubtedly prove one of the most attractive features of the exposition.

Massachusetts

The Massachusetts Forestry Association is still pursuing its policy of establishing Branch Associations, and within the past two months has organized seven of these branches and has added over three hundred names to its membership list. Besides the organization work, the field foresters have covered over two thousand acres, marking trees affected with the Chestnut Tree Blight; thinning of wood lots; and writing general reports. A great many apple orchards have also been pruned by these men.

The Branch Associations are solving the various problems before them consisting of the establishment of municipal nurseries; the reforestation of watershed areas; the protection of shade-trees by procuring special appropriations for tree surgery and for power sprayers. Some of these organizations are also taking steps toward obtaining trained foresters to take the place of the present Tree Wardens. Some of these branches have already made progress in the establishment

of municipal forests on the waste lands owned by the towns, which it is hoped will be the outcome of the reforestation of water supply areas. By this means, the conservation of our natural resources is to be accomplished which will mean the reclamation of our one million acres of wild and waste land. The municipal forest system which has been so successful in Germany is to be adopted in modified form in this State. On the whole, the outlook is more cheerful than ever in the past and the practical demonstrations of good forestry made by the field men throughout the State has proved to be the best means of education the Association has yet discovered.

Maine

Mr. Blaine S. Viles has been appointed by the Governor of Maine to succeed Mr. Mace as State Land Agent and Forest Commissioner. Mr. Viles is a graduate of Bowdoin and also of the Yale Forest School and is the first technically trained forester who has ever been appointed to this position in Maine. The many men in Maine who are deeply interested in forestry are confident that Mr. Viles will do splendid work in his new position.

Wisconsin

The Wisconsin State conservation commission will recommend a one-tenth of a mill tax on all property for a twenty-year period, the funds to be used for the upbuilding of the State forest reserve. The commission has held its final meeting to discuss legislation, and will file its recommendations with the Governor immediately.

This tax would raise approximately \$224,000 a year. It would allow the State to make land contracts for the purchase of tracts in Northern Wisconsin. While there is approximately 400,000 acres of land now in the forest reserve, State Forester E. M. Griffith believes that the State must ultimately own 1,200,000 acres.

Minnesota

Approximately \$150,000 worth of timber on State lands was sold by State Auditor Iverson in the Northern part of the State during December. Of this amount, \$50,000 has been paid in cash. The highest price paid for pine was \$21 and this is the record price in this State. The section which brought this was in St. Louis county. Tamarack ties were sold for 26 cents each and spruce pulpwood for \$3.50 a cord.

"There was an active demand for all the timber," Mr. Iverson said, "and all I offered at public auction was sold. This timber is scattered, is in small tracts and was sold because part of it had been burned over, some was down in windfalls and it was to prevent a complete loss that it was placed on the market."

New York

The entire forest fire field force of the New York Conservation Commission was in Albany from February 4th to 8th, and general instructions were given them. The three forest taxation laws which were passed last year are becoming widely known and a large number of requests for information and applications are being received.

A bill has been introduced into the present legislature appropriating the sum of one hundred thousand dollars for reforesting purposes. This is in addition to the sums which were asked for by the Conservation Commission in its regular appropriation. The program of instruction to the forest fire field force comprised the following:

Organization, etc., talks by Supt. Pettis and Asst. Supt. Howard; Fire fighting and general work, reports and accounts talk by Asst. Supt. Howard; Fire fighting, top lopping, railroad work, etc., talk by Asst. Supt. Howard; Telephone repairs talk by N. Y. Telephone Co. representative; Surveying and estimating areas talk by Forester King; Timber estimating and valuation surveys talk by Forester Gaylord; Forest mapping talk by Forester Rosenbluth; Trespass and occupancy talks by Supt. Pettis and Mr. McClung; Silviculture talk by Forester Gaylord; Reforesting talk by Forester Barrus.

North Carolina

It looks now as though North Carolina would be unable, at least for the next two years, to co-operate with the Forest Service in the protection of the forests on the headwaters of her streams, under the terms of the Weeks Law. The forest warden bill which was drawn up by the Legislation Committee of the North Carolina Forestry Association, and which was introduced into the General Assembly toward the end of January, has received an unfavorable report from the committees to which it was referred, which is equivalent to killing the bill. The condition of the State Treasury, which shows a deficit of something over three-quarters of a million dollars, is given as the chief excuse for not appropriating any money for forest protection at this time. The fact that the annual loss from fires in North Carolina for the last three or four years has averaged about one-half million dollars is lost sight of. An appropriation of \$5,000 would have started effective measures, which would have reduced this annual loss more and more each year; but this false economy

advocated by several members was the chief cause of the defeat of the measure.

Public opinion throughout the State is very much more strongly in favor of a law for forest protection now than it was two years ago, when the last Legislature met. If this feeling continues to increase at the same rate, it seems hardly possible that the next Legislature will deny the timberland owners the protection which they demand.

Connecticut

Studies of deterioration in blight-killed chestnut timber are being made in Western Connecticut by the Division of Products, U. S. Forest Service. Definite information on this subject will be of value in securing a market for such products.

The Connecticut Agricultural Experiment Station is publishing a report on the Wood-Using Industries of Connecticut as Bulletin 174. Like similar publications in other States, this bulletin was prepared through co-operation with the U. S. Forest Service.

The report of the Special Commission on Taxation of Woodland has been presented to the General Assembly, and a bill introduced embodying the recommendations of the Commission, which it is hoped, will receive favorable action at this session. The plan of taxation proposed is a combination of land tax and yield tax which will assure woodland owners against unjust taxation in the future without reducing present tax income. The application of the proposed law is to be made optional with landowners, and will offer a decided stimulus to the planting of waste lands with forest trees. The edition of the report is small, but a limited number of copies is available for distribution to foresters interested in the subject. They may be secured by writing the State Forester, New Haven, Conn.

Michigan

The Michigan State Forestry Association, upon the request of the President of the American Forestry Association, has addressed letters to the Michigan delegation in Congress asking that they commit themselves on the question of transferring the national resources, especially the National Forests, over to State control. United States Senators Wm. A. Smith and Charles E. Townsend have gone definitely on record against the proposal and in favor of continued Federal ownership and control; and Congressmen Henry McMorran, M. C. Smith, Edward L. Hamilton, and James C. McLaughlin have gone on record against transfer to the States as have the Senators from Michigan.

The remaining Congressmen have not yet replied or have replied in a very indefinite manner. The Association will use every endeavor to secure a definite statement from each individual.

New bills for the State Legislature have been drafted and will be introduced in the near future. They will cover the abolishment of the office of the State Land Commissioner, which has become a nominal office only and which has long been dominated by adverse political influence; the modification of the Public Domain Commission in a manner similar to the Forestry Board of Wisconsin and in such a way as to remove the Commission from the political domain; and a bill to create the office of State Forester so that the State Forester will function as such and will have the administration of the State lands and forests and the fire laws. The proposed bill incorporates the fire law of Minnesota almost exactly as it stands, changes having been made only where it seemed that the law could be still further strengthened.

Petitions calling for these changes have been circulated widely throughout the State and have been forwarded to the Governor by the hundred. In this work the State Federation of Womens Clubs has been rendering splendid assistance.

There is a possibility of the Governors sending in a special message of forestry and its need in Michigan.

Effort is now being made to secure the backing of the Fire Associations and the lumbermen for the fire law.

South Dakota

South Dakota has one of the very few producing State forests in the United States, and it is the policy of the State's Department of School and Public Lands to maintain its

forest lands on a producing basis, rather than to sell the lands to settlers or lumber companies.

On February 18th bids were opened at the office of the Commissioner of School and Public Lands at Pierre for approximately 100 million feet of mature Western yellow pine on the Custer State forest. The advertised minimum rate is \$3 per thousand feet, B. M., but it was expected by the Commissioner that the bids would exceed this amount somewhat as there are a number of bidders and considerable interest is shown in the sale. Minneapolis, Kansas City and Iowa lumber companies are represented in the bidding, as well as a local Black Hills company.

It is expected that this timber will bring at least \$3.50 per thousand. The amount offered constitutes slightly less than half of the mature timber on this tract. The logging operations will be under the supervision of the State Forester on regulations approved by the Board of School and Public Lands.

The preliminary plan of the Forester for the administration of this forest has been approved by the Commissioner, and the amount necessary to carry it into effect and to organize and equip the State's Forest Service has been included in the department's budget and incorporated in the General Appropriation Bill, which is expected to pass the Legislature in a few days.

With the logging operations in prospect and in organizing the Forest Service and carrying into effect the provisions of the preliminary plan, forest activities in the State's forest lands will be greatly increased.

EDUCATIONAL

At the University of Idaho

Prof. C. H. Shattuck, of the University of Idaho, has established a ten weeks' course in practical forestry. It is designed to be of substantial aid to forest rangers and others wishing to increase their efficiency or fit themselves for Forest Service or lumbering positions.

In lumbering all the operations common to Idaho and surrounding country are taken up. Special emphasis is given to methods, costs and labor. A part of the time is spent studying lumbering operations in one of the largest logging camps in the West. Lectures and demonstrations at the saw-mill by an official lumber inspector of the Northern Pine Manufacturing Association are given. Forest engineering consists of forest surveying, mapping, timber estimating, laying out roads and trails, telephone construction, simple bridge building, construction of logging roads, chutes, flumes, etc. Forest protection includes organization and methods of fire patrol, systems of roads, fire lines, lookout points; fire fighting, outfitting, sup-

plies; fire laws; identification and study of tree diseases and damaging insects. Forest management includes a study of forest influences; forest requirements; methods of timber marking and thinning; seeding, collecting and storing of seed. Several forest supervisors and lumbermen lecture at various times on different phases of forest administration and lumbering.

The University of Washington

The College of Forestry at the University of Washington for the past two years has been giving a specialized undergraduate course in logging engineering and several advanced courses along other lines for graduate students. It is now the plan of the faculty of forestry to enlarge upon the opportunities given the student for specialization. The field of work open to the forest school graduates of the West is such that considerable specialization is now almost a necessity. At a recent meeting of the University Faculty it was decided to abandon the former four-

year courses in 1914 and to offer in their place beginning in September, 1913, a new five-year course that will allow for thorough specialization along three distinct lines, (1) Silviculture and Management, (2) Logging Engineering, (3) Forest Products. According to the plan as outlined, the students will begin to elect courses with reference to their specialty in the junior year. Thus, for example, those wishing to specialize in logging engineering will elect more work along engineering lines and a student in forest products will elect more chemistry, and so on. Advanced specialized courses will be given during the senior and graduate years in Silviculture, Forest Management, Logging Engineering, Wood Utilization and Wood Preservation. These advanced courses will be strictly specialized in character and will require for enrollment that the student has carried the general courses in forestry and certain specific courses in chemistry, mechanics, or engineering as prerequisites.

The scheme does not preclude the idea of a general course in forestry. It will still be possible for the student to procure the usual general training during the first four years. In addition to allowing for thorough specialization, the scheme has the general advantage of eliminating from the student's course specialized subjects wholly foreign to his particular needs. The new course has been fully outlined and will appear in the new College Bulletin which is now in preparation.

Pennsylvania State College

The Senior Class in lumbering of Pennsylvania State College has just returned from a most interesting and instructive trip in the lumbering district of Northern Central Pennsylvania.

En route to Galeton, Pennsylvania, the class visited the State Nurseries in Tioga County and the mill of the Penn Yan Basket Company at Gaines.

While at Galeton a study was made of the hardwood operations of the Emporium Lumber Company and the hemlock milling and logging of the Central Pennsylvania Lumber Company.

Very interesting side trips were made to the National Chemical Company's Hardwood Distillation Plant and also that of the Gaffney Chemical Wood Products Company, the Telescope Folding Cot and Novelty Company's mills, the Galeton Heading and Stave Company, the Whitney Hub Company, Pennsylvania Wood Company's kindling wood factory and Elk Tanning Company's tanneries.

On leaving Galeton returning to State College the class visited the Bayless Paper and Pulp Company, the Austin Mill of the Emporium Lumber Company, and the paper mills of the New York and Pennsylvania Paper Company at Lock Haven, completing this trip with an inspection trip through the

factory of the Pennsylvania Match Company at Bellefonte.

During the trip instructive talks were given by Mr. U. B. Russell, of Cloudersport, on "History of Lumbering in Northern Pennsylvania;" Mr. F. P. Sykes, woods superintendent of Emporium Lumber Company, on "Portable Slides and Their Economic Features;" Mr. W. W. Lowell, mill superintendent of the Central Pennsylvania Lumber Company, and interesting little talks on Forestry by Mr. W. L. Sykes, President of Emporium Lumber Company and Chairman of the Forestry Commission of the Empire State Forests Products Association.

University of Montana

The University of Montana's fourth session of its short course in forestry opened on the 7th of January and closes on March 29. This course has hitherto proven very popular with men of the forest service. It has also met with emphatic approval of high officials of the forest service who appreciate the increased efficiency of the men who have taken advantage of this opportunity.

It is the purpose of the short course to offer such studies as will be most serviceable to rangers in their work. Instruction is given in dendrology, silviculture, forest pathology, surveying, mapping, drafting, topographical work, mathematics, mensuration and physics. The course is open to all men 19 years of age and upward who give evidence of ability to carry on their studies successfully. No previous special training is required.

Biltmore Notes

John F. Heck, 1912, is scaling for the Berlin Mills Co., at Berlin, N. H.

Richard W. Foote, 1912, is mapping for a lumber company at Mt. Mills, Vt.

F. B. Genzmer, W. H. McGrath, C. T. Shaw, and Perin J. Meyers, all 1912, are working for the Hammond Lumber Company of Eureka, Cal., at their camps at Samoa, Humboldt County, Cal.

D. B. Otis, 1912, is scaling for the Smith-Powers Logging Co., at Marshfield.

H. W. Garnett, 1910, is in the Forest Service at Arbolado, Cal., with N. H. Sloane, 1909, who is Acting Supervisor for that district.

Lincoln Crowell (Yale), who spent the winter of 1911-1912 with us in Germany, is Deputy Supervisor in the Indian Service, at Neopit, Wis.

Carl H. Nye, 1912, has received an appointment to the Dominion Forest Service at Calgary, Alta., Canada.

CURRENT LITERATURE

MONTHLY LIST FOR FEBRUARY, 1913.

(Books and periodicals indexed in the Library of the United States Forest Service.)

Forestry as a Whole

Bibliographies

Rehder, Alfred. The Bradley bibliography; a guide to the literature of the woody plants of the world published before the beginning of the 20th century. Vol. 2. Cambridge, 1912. (Arnold arboretum. Publication no. 3.)

Proceedings and reports of associations, state foresters, etc.

- Clearwater timber protective association. Sixth annual report. 25 p. Orofino, Idaho, 1912.
- India—Forest department. Statistics relating to forest administration in British India, 1910-11. 27 p. il. Simla, 1912.
- India—Imperial forest research institute. Progress report for 1911-12. 28 p. Calcutta, 1912.
- New Hampshire—Forestry commission. Biennial report for the years 1911-12. 132 p. pl., maps. Concord, N. H., 1912.
- New York—Conservation commission. First annual report, 1911. 232 p. pl., maps. Albany, N. Y., 1912.
- North Carolina—Geological and economic survey. Annual meeting of the North Carolina forestry association. 5 p. Chapel Hill, N. C., 1913. (Press bulletin 100.)
- Ohio—Agricultural experiment station. Fifth annual report of forest conditions in Ohio. 54 p. Wooster, 1912. (Bulletin 254.)
- Pennsylvania—Dept. of forestry. Report for the years 1910-11. 277 p. pl. Harrisburg, 1912.
- Philippine Islands—Bureau of forestry. Annual report of the director of forestry for the fiscal year ended June 30, 1912. 59 p. pl. Manila, 1912.
- Queensland—Dept. of public lands. Report of the director of forests, 1911. 6 p. Brisbane, 1912.
- Royal English arboricultural society. Transactions and list of members, vol. 8, pt. 1. 83 p. Haydon Bridge, Northumberland, 1912.
- Royal Scottish arboricultural society. Transactions, vol. 27, pt. 1. 120 p. Edinburgh, 1913.
- Society for the protection of New Hampshire forests. Forestry in New Hampshire; eleventh report, 1912. 96 p. pl., maps. Concord, N. H., 1912.

South Africa—Forest department. Report of the chief conservator of forests for the year ending 31st December, 1911. 31 p. pl. Cape Town, 1912.

Western forestry and conservation association. Proceedings of forest fire conference, Seattle, Wash., Dec. 2-3, 1912. 50 p. Portland, Ore., 1912.

Forest Education

Exhibitions

India—Forest research institute. Catalogue of the photographic collection at the Forest research institute, Dehra Dun, India, up to date 1st November, 1911. 245 p. Calcutta, Supt. gov't printing, 1912.

Forest Description

- Cobb, Collier. The forests of North Carolina. 22 p. Chapel Hill, N. C., 1912.
- Fernow, B. E., and others. Forest conditions of Nova Scotia. 93 p. pl., maps. Ottawa, Canada, Commission of conservation, 1912.
- Holmes, J. S. A forester's notes from Europe; England, 4 p. Chapel Hill, N. C., 1912. (North Carolina—Geological and economic survey. Press bulletin 90.)
- Murphy, Louis S. A preliminary report on the forest problems of Porto Rico. 14 p. San Juan, P. R., Board of commissioners of agriculture, 1912.
- Williams, John H. The guardians of the Columbia; Mt. Hood, Mt. Adams and Mt. St. Helens. 144 p. il. Tacoma, Wash., J. H. Williams, 1912.

Forest Botany

Woods: classification and structure

- Mell, Clayton D., and Brush, W. D. Greenheart. 12 p. pl. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Circular 211.)
- Sudworth, George B., and Mell, Clayton D. Circassian walnut. 12 p. pl. Washington, D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Circular 212.)

Silvics

Relation between trees and their environment

- Greenamyre, Harold H. The composite type on the Apache national forest. 32 p. il. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Bulletin 125.)

Studies of species

- Murdoch, John. Chestnut; its market in Massachusetts; a compilation prepared for the Massachusetts state forester in co-operation with the Office of investigations in forest pathology, Bureau of plant industry, U. S. Dept. of agriculture. 21 p. Boston, 1912.

Silviculture

- Brown, A. F. *Silviculture in the tropics* 300 p. il. London, Macmillan & Co., 1912.
- Schench, C. A. *The art of the second growth, or American silviculture.* 3d & rev. ed. 206 p. Albany, N. Y., Brandow printing Co., 1912.

Planting

- Bates, Carlos G., and Pierce, Roy G. *Forestation of the sand hills of Nebraska and Kansas.* 49 p. pl. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Bulletin 121.)
- Rhode Island—Commissioner of forestry. *How to plant shade trees.* 4 p. il. Providence, 1912. (Leaflet no. 7.)

Forest Protection**Insects**

- Fiske, W. F. *The gipsy moth as a forest insect, with suggestions as to its control.* 20 p. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Bureau of Entomology. Circular 164.)

Forest Management

- Foster, J. H. *Suggestions for cutting white pine lots.* 1 p. Durham, N. H., 1912. (New Hampshire—Agricultural experiment station. Press bulletin 22.)
- Holmes, J. S. *Forestry for the eastern North Carolina lumberman.* 6 p. Chapel Hill, N. C., 1912. (North Carolina—Geological and economic survey. Press bulletin 92.)

Forest Mensuration

- Schiffel, A. *Die waldbusssole als dendrometer.* 23 p. il. Wien, W. Frick, 1909.

Forest Economics**Statistics**

- Merritt, Eugene. *International trade in farm and forest products, 1901-10.* 56 p. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Bureau of Statistics. Bulletin 103.)

Forest Administration

- United States—Dept. of agriculture—Forest service. *January field program, 1913.* 36 p. Wash., D. C., 1913.

Forest Utilization**Wood-using industries**

- Armstrong cork company. *Cork; being the story of the origin of cork, the processes employed in its manufacture, and its varied uses in the world to-day.* 46 p. il. Pittsburgh, Pa., 1909.
- Veitch, F. P., and Merrill, J. L. *Pulp and paper and other products from waste resinous woods.* 28 p. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Bureau of chemistry. Bulletin 159.)

Forest by-products

- Hawley, L. F. *Wood turpentine; their analysis, refining, and composition, based*

upon experiments at the Forest products laboratory at Madison, Wis. 69 p. il. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Bulletin 105.)

- Hooper, David. *Oils and fats of vegetable origin produced in British India.* 62 p. Calcutta, 1912. (Agricultural ledger, 1911-12, no. 5.)

- Schorger, A. W. *An examination of the oleoresins of some western pines.* 36 p. pl. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Bulletin 119.)

Wood Technology

- Goss, O. P. M. *Mechanical properties of western larch.* 45 p. il. pl., diagr. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Bulletin 122.)
- Goss, O. P. M. *Mechanical properties of western hemlock.* 45 p. il., pl., diagr. Wash., D. C., 1913. (U. S.—Dept. of agriculture—Forest service. Bulletin 115.)

Auxiliary Subjects**Botany**

- Jepson, Willis Linn. *A flora of California.* pt. 1-3. San Francisco, Cunningham, Curtiss & Welch, 1909-12.

Geology

- Perisho, E. C., and Visser, Stephen Sargent. *The geography, geology and biology of south-central South Dakota.* 152 p. pl., maps. Vermilion, S. D., 1912. (South Dakota—Geological and biological survey. Bulletin 5.)

Periodical Articles**Miscellaneous periodicals**

- Agricultural journal of the Union of South Africa*, Dec., 1912—Inquiry into dips and dipping in Natal, by A. Theiler, p. 814-29.
- Botanical gazette*, Jan. 1913.—The climax forest of Isle Royale, Lake Superior, and its development, by Wm. S. Cooper, p. 1-44; Ray tracheids in the coniferales, by Ruth Holden, p. 56-64.
- Bulletin agricole du Congo Belge*, Dec., 1912.—Aperçu sur la forêt du Mayumbe, by J. de Briey, p. 806-27.
- Bulletin of the American geographic society*, Jan., 1913.—The dwarf forests of southern California, by Isaiah Bowman, p. 13-16.
- Country gentleman*, Dec. 14, 1912.—The prairie farmer's tree problem, by C. L. Meller, p. 3, 32.
- Country gentleman*, Dec. 21, 1912.—The tree thief; a parasite that is popular at the Christmas season, by Enos A. Mills, p. 31.
- Country life in America*, Jan., 1913.—Touring in our national parks, by Enos A. Mills, p. 33-6.
- Gardeners' chronicle*, Dec. 7, 1912.—The Woburn forests, by J. G. Watson, p. 422.
- Gardeners' chronicle*, Jan. 11, 1913.—Dwarf conifers, p. 21.

- Hearst's magazine, Jan. 1913.—Conservation of natural resources, by H. S. Williams, p. 124-34.
- Muhlenbergia, Dec. 27, 1912.—The California white fir, by A. A. Heller, p. 121-31.
- National wool grower, Jan., 1913.—Co-operation in range management, by A. F. Potter, p. 15-17.
- Nature study review, Jan. 1913.—Tree study in winter, by A. F. Blakeslee, p. 13-21.
- Outlook, Dec. 28, 1912.—Shall the states own the forests? by H. S. Graves, p. 935-44.
- Pearson's magazine, Jan., 1913.—Conservation as practiced, by Ed. H. Thomas, p. 88-96.
- Plant world, Jan., 1913.—The resistance offered by the leaves to transpirational water loss, by Burton Edward Livingston, p. 1-35; A note on a chaparral forest relation at Carmel, Cal., by W. A. Cannon, p. 36-8.
- Scientific American, Feb. 1, 1913.—The growth of stumps, p. 112.
- Scientific American supplement, Jan. 18, 1913.—Gambia mahogany, p. 43.
- Scientific American supplement, Feb. 1, 1913.—Silk cottons; economic products from tropical trees, p. 76-7.
- Southern planter, Dec., 1912.—Tree planting, by H. B. Arbuckle, p. 1303-4, 1310-11.
- Southern planter, Jan., 1913.—Scrub pine, by G. E. Wharton, p. 31-2.
- Technical world magazine, Jan. 1913.—Fifteen forests on one spot, by Guy E. Mitchell, p. 589-90; New process of finishing cypress, by R. H. Moulton, p. 621-2.
- Torreya, Feb., 1913.—Some trees and shrubs of Rockland county, by Elsie M. Kittredge, p. 25-33.
- Trade journals and consular reports*
- American lumberman, Jan. 18, 1913.—Silos; the opportunity for the retail lumber dealer, by A. Thorne Swift, p. 47-8.
- American lumberman, Jan. 25, 1913.—Durability of cypress, p. 31; Timberland bonds as investments, by H. S. Sackett, p. 33-5; Preparing logged-off land for the plow, p. 42-3. The modern wood silo and its construction, by Charles E. Davidson, p. 44-5; Chinese afforestation, p. 47; Oak for coopers, p. 50; Brazilian sawmills, by John P. Harper, p. 65-6.
- American lumberman, Feb. 1, 1913.—Selling national forest timber; defense of government's system of disposing of timberlands, by Henry Solon Graves, p. 42; Public land laws discussed; policies and plans for handling all questions in connection with national forests reviewed, p. 64; European wood paving block specifications, by E. A. Sterling, p. 70.
- American lumberman, Feb. 8, 1913.—Forestry in Japan, p. 41; Forest supervisors of District No. 2 discuss important topics, p. 54; The utilization of wood waste, by H. K. Benson, p. 61.
- Canada lumberman, Jan. 15, 1913.—Forestry students in practice camp, by H. R. Christie, p. 30-2; Preparation red pine volume tables, by A. H. D. Ross, p. 32-3; Use of flumes in logging operations, by W. D. Starbird, p. 42-3. The use and value of forest maps, by K. McR. Clark, p. 43-4.
- Canada lumberman, Feb. 1, 1913.—Lumber trade of Canada during 1912, p. 28-49.
- Engineering news, Nov. 14, 1912.—The design of log flumes, by J. P. Martin, p. 908-13.
- Engineering record, Oct. 26, 1912.—Engineering features of a large southern lumbering development, p. 456-8.
- Hardwood record, Jan. 25, 1913.—California laurel, p. 20-1; Allowing for center rot in logs, by S. J. Record, p. 21; Sap's relation to properties of wood, by S. J. Record, p. 22-3; New process for making sugar, by Leonard Keene Hirshberg, p. 27-8; Qualities of water-soaked wood, p. 28; Flagstaffs for railroad men, p. 29; Distinguishing between the gums, by S. J. Record, p. 33-4.
- Hardwood record, Feb. 10, 1913.—The government's timber, p. 16-17; Weed trees in the wood lot, p. 17; Black cottonwood, p. 20-1; Universal names needed for trees, p. 22; Hardwoods on the Pacific coast, p. 25-6; steaming lumber under pressure, by Henry H. Gibson, p. 26-7; Unknown things about wood, p. 28; Useless hardwoods will have value, p. 34b-c; Lumbering in Jamaica, p. 34d.
- Lumber world review, Jan. 10, 1913.—The timber bond as good as a gold bond, by W. F. Brown, n. 23-4.
- Lumber world review, Jan. 25, 1913.—Western forestry and conservation association; ideals and purposes of this great organization, by E. T. Allen, p. 23.
- Mississippi Valley lumberman, Feb. 7, 1913.—Views of the chief forester on forest protective measures, by H. S. Graves, p. 41-2.
- Pacific lumber trade journal, Jan. 1913.—Round silos made of wooden staves have proven the most satisfactory, p. 43; A previously prejudiced east swings wide open to receive the fir door, p. 86.
- Paper, Jan. 15, 1913.—Laboratories of the forest products service; description of the electrical and mechanical equipment; the ground wood laboratory, p. 20-3.
- Paper, Jan. 29, 1913.—Wood waste utilization; the industry in its relation to expert advice, by John Teeple, p. 21-2.
- Paper, Feb. 12, 1913.—Lignocelluloses and animal assimilation; studies in the availability of wood waste as animal fodder, p. 21-2; Statistics of paper manufacture in Japan, p. 23.
- Paper trade journal, Jan. 2, 1912.—The ceiba tree, by C. D. Mell, p. 54; Brown wood pulp and "half cellulose" from resinous wood, by J. Aktchourine, p. 56.
- Paper trade journal, Jan. 9, 1913.—Bamboo pulp in Tonkin, by C. Engel, p. 56.
- Pioneer western lumberman, Jan. 15, 1913.—Developments in forest patrol efficiency,

- by D. P. Simons, p. 13-15; Railroad co-operation in fire prevention, by T. J. Humbird, p. 17; Common sense in forest protection, by A. L. Flewelling, p. 20.
- Pulp and paper magazine, Jan. 1, 1913.—Canada's pulp wood resources, p. 4-6; Method of manufacturing cellulose from resinous wood, by B. F. A. Saylor, p. 29; Dominion forestry policy, by R. H. Campbell, p. 30-1; The wood refuse producer gas plant, by E. B. Archibald, p. 32-3; Canadian regulations relating to pulp wood and other timber, p. 36-40.
- Pulp and paper magazine, Jan. 15, 1913.—Japan's paper plants, p. 57-9.
- Pulp and paper magazine, Feb. 1, 1913.—The forestry camp of the University of New Brunswick, by R. B. Miller, p. 91-9.
- St. Louis lumberman, Jan. 15, 1913.—Modern logging methods, p. 57-8; Creosoted wood block in Atlanta, Ga., by R. M. Clayton, p. 70; Lumber industry of western Canada, by Chas. McIntyre, p. 71-2.
- St. Louis lumberman, Feb. 1, 1913.—Silos; an opportunity for the retail lumber dealer, by A. Thorne Swift, p. 30-1; Forestry on lands unprofitable for agriculture, by W. R. Dodson, p. 78; Forest pathology, by Robert D. Rands, p. 80.
- Southern lumberman, Feb. 1, 1913.—Pacific coast lumber vs. southern yellow pine; vital interest of the manufacturer, wholesaler and retail dealer in the opening of the Panama canal, by Benjamin B. Wood, p. 24-5.
- Timberman, Jan. 1913.—Imperative need of reform legislation on question of timber taxation, p. 26-7; Wire rope tramway in successful operation in German East Africa, p. 50-1; Accurate topographic map prerequisite to location of logging roads, by Judson F. Clark, p. 56-7; Washington university developing special course in logging engineering, p. 61.
- United States daily consular report, Jan. 17, 1913.—Lumber trade in Great Britain, by E. P. Secker, p. 289-94.
- United States daily consular report, Feb. 12, 1913.—Valuable forest trees of Chiloe Island, by Alfred A. Winslow, p. 776-7.
- Wood craft, Feb. 1913.—The characteristic odor of certain woods, by Samuel J. Record, p. 144-5; Photography on wood, by J. Fitz-Gerald, p. 146.
- Forest journals*
- Allgemeine forst- und jagd-zeitung, Nov. 1912.—Beeinflussung der wurzelbildung und wuchsenergie der fichte durch zwischenbau von perennierender lupine, by A. Flander, p. 367-70; Formzahlen für eichen- und eschenoberhölzer aus badischen mittelpflanzungen, by Gayer, p. 370-6; Einiges über die espe, by Guse, p. 376-9.
- Boletín de bosques, pesca i caza, Dec. 1912.—El fresno europea; Fraxinus excelsior, by Federico Albert, p. 413-18.
- Centralblatt für das gesamte forstwesen, Oct. 1912. Eine neue methode der ableitung allgemeiner theoretischer kubierungsformeln und die bedingungen ihrer anwendbarkeit in der holzmesskunde, by A. Schiffel, p. 435-50; Modern transportanlagen im dienste der holzgewinnung und holzindustrie, by Hans Wetlich, p. 451-60.
- Forestry quarterly, Dec. 1912.—The forests of the Philippines, by M. L. Merritt, p. 571-601; The Philippine Bureau of forestry; its organization and work, by W. D. Sterrett, p. 602-9; Lumbering in the Philippines, by Donald M. Matthews, p. 610-15; Museum of Philippine forest products, by E. E. Schneider; The northern Negros forest, by Heber G. Stout, p. 619-22; The usefulness of the non-Christian tribes for forest work, by Domingo L. Diaz, p. 623-5; Impressions of forest administration in British India, by Theodore S. Woolsey, p. 626-9; A phase of fire protection, by Theodore S. Woolsey, p. 630-1; Forests and forestry in the German colonies, by B. E. Fernow, p. 632-46; Forests and timber trade of the Chinese Empire, by R. Rosenbluth, p. 647-72; The tropical or antillean region of Florida, by Nelson C. Brown, p. 673-8; The distribution of costs and values in a logging operation, by R. C. Hall and Dean W. Martin, p. 679-90.
- Forstwissenschaftliches centralblatt, Jan. 1913.—Zur frage der ausbildung der privatforstbeamten, p. 2-10; Die reinertträge der staatswaldungen in Elsass-Lothringen, Baden und Württemberg, by Karl Eduard Ney, p. 10-20.
- Indian forester, Jan. 1913.—Epiphytes on soap-nut trees in Spriharikota, Nellore district, by C. Balayya Nayudu, p. 1-5; Memorandum on the tea-chest industry in Travancore, by M. Rama Rao, p. 5-15; Forest education in Madras, by V. Subramania Iyer, p. 15-23; Fire protection in the tropics, p. 24-30; Forest loans, p. 30-7.
- Naturwissenschaftliche zeitschrift für forst- und landwirtschaft, Sept. 1912.—Die forstentomologie in den Vereinigten Staaten von Amerika, by K. Escherich, p. 433-45.
- North woods, Jan. 1913.—Our national forests in danger, by Carrie Haskins Backus, p. 3-6; Pine forests of Minnesota, by Fred A. Weyerhaeuser, p. 16-20; Rangers and slash disposal, by Hans Kasper, p. 24-6.
- Quarterly journal of forestry, Jan. 1913.—Forestry in the Black forest, p. 1-19; Oak and black walnut plantation, by Hugh R. Beevor, p. 28-9; Hungarian forestry school, Selmeczbanya, by Fraser Story, p. 30-2; Raising black walnuts, by W. Somerville, p. 32-3.
- Revue des eaux et forêts, Jan. 1, 1913.—La destruction des forêts particulières par les charges fiscales, by Gouget, p. 1-5; Le bostriche typographe, by Rey, p. 5-6; Le caoutchouc a Madagascar, by Louvel, p. 7-14.

